5.0 ENVIRONMENTAL CONSEQUENCES

This section presents an analysis of the impacts the Recommended Alternative would have on the cultural, social, environmental, and economic environment of the surrounding area. Any new roadway construction or improvements within the study area will impact existing residents, businesses, farmland, and natural features. In this section, the impacts of the No-Build scenario are compared with those of the Recommended Alternative, which calls for construction utilizing a combination of existing and new right-of-way.

As discussed in **Section 3.0 Alternatives Considered**, three freeway Build Alternatives (PA-2 through PA-4) were considered in this Final Supplemental Environmental Impact Statement (FSEIS); only the Recommended Alternative PA-2 is carried forward in this section. For a complete analysis of all Practical Alternatives, see the Draft Supplemental Environmental Impact Statement (DSEIS) published in 2002. Although only the Recommended Alternative PA-2 and No-Build Alternative will be discussed in this section, some figures and tables include all Practical Alternatives for comparison purposes. All Practical Alternatives are depicted on a map at the back of this document which can be folded out for reference while reviewing the text (**Appendix F**). A summary of impacts for all Build Alternatives is contained in **Table I** at the end of the **Executive Summary** for this FSEIS.

5.1 Land Use and Zoning Impacts

Recommended Alternative PA-2 primarily impacts agricultural land uses and existing roadways, with minimal impacts on residential, commercial, and industrial land uses. Rural zoning classification properties comprise approximately 98 percent of all project related land use impacts while rural residential and public/semi-public land uses make up the remaining two percent of impacts. Land use impacts include the conversion of mostly agricultural uses to a roadway land use and the potential development of adjacent lands due to increased accessibility. With the completion of all directional movements at Business Loop I-94 (BL-94), increased accessibility to the Benton Harbor/St. Joseph area will assist existing development and other economic development initiatives near BL-94. Access limitations on the freeway alignment will, however, limit development adjacent to the freeway.

5.1.1 Land Use Impacts

Impacts of No-Build Alternative: No significant land use changes are expected with the No-Build Alternative. Existing land use patterns as described in **Section 4.1 Land Use,** will likely remain relatively unchanged. Development can be expected to grow proportionate to the forecasted growth in population as described in Section 4.5 Socio-Demographics of the DSEIS. A residential subdivision consisting of approximately 16 one-acre lots is being proposed for the northeast quadrant of the intersection between Benton Center Road and East Britain Avenue. Benton Charter Township is planning for commercial development on Napier Avenue, which is expected to take place with both the Recommended Alternative and the No-Build Alternative. This is due in part to the completed construction of the US-31 interchange at Napier Avenue and the recent widening of Napier Avenue to five-lanes between I-94 and the new US-31 interchange.

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 will directly impact existing agricultural and residential land uses. **Table 5.1** shows the additional property acquisition required as right-of-way for Recommended Alternative PA-2 by land use type. No significant development or changes in land use are expected in the study area itself since the proposed interchange does not provide new points of access to local roads inside the study area. Improved access to BL-94, as provided by Recommended Alternative PA-2 will be supportive of other development/redevelopment efforts within the economically depressed Benton Harbor region immediately west of the study area. However, land use classifications are not likely to change significantly from the mixture of residential, commercial, and industrial land uses currently designated along BL-94.

Table 5.1 Existing Land Use Within Potential US-31 Right-of-Way

Land Use Category (acres of right-of-way)	**Recommended Alternative PA-2**	
	***Previously Acquired**	**Need to Acquire**
Agriculture/Open Space	94	308
Residential	0	1
Public/Semi-public	0	0
Total Acres	**94**	**309**

*Previously acquired refers to right-of-way (ROW) already purchased by MDOT for construction of the approved 1981 FEIS alignment. Figures represent owned ROW that can be utilized for the designated alternative.

5.1.2 Compatibility with Zoning / Official Plans

The study area falls entirely within Benton Charter Township. Analysis of the zoning compatibility of Recommended Alternative PA-2 for US-31 is based on the Benton Charter Township Zoning Ordinance and corresponding Zoning Map. **Section 5.4 Secondary and Cumulative Development Impacts**, includes an assessment of development that may be encouraged by the Recommended Alternative. A composite land use map for the study area based on the current zoning ordinance and land use plan is illustrated in **Figure 5.1**. The majority of land within the study area is zoned as rural (A-A district). Only farming related structures and single family residences are permitted in this zone with exceptions made for public facilities like schools, churches, and utilities. There are also scattered pockets of single family dwelling districts located in the study area.

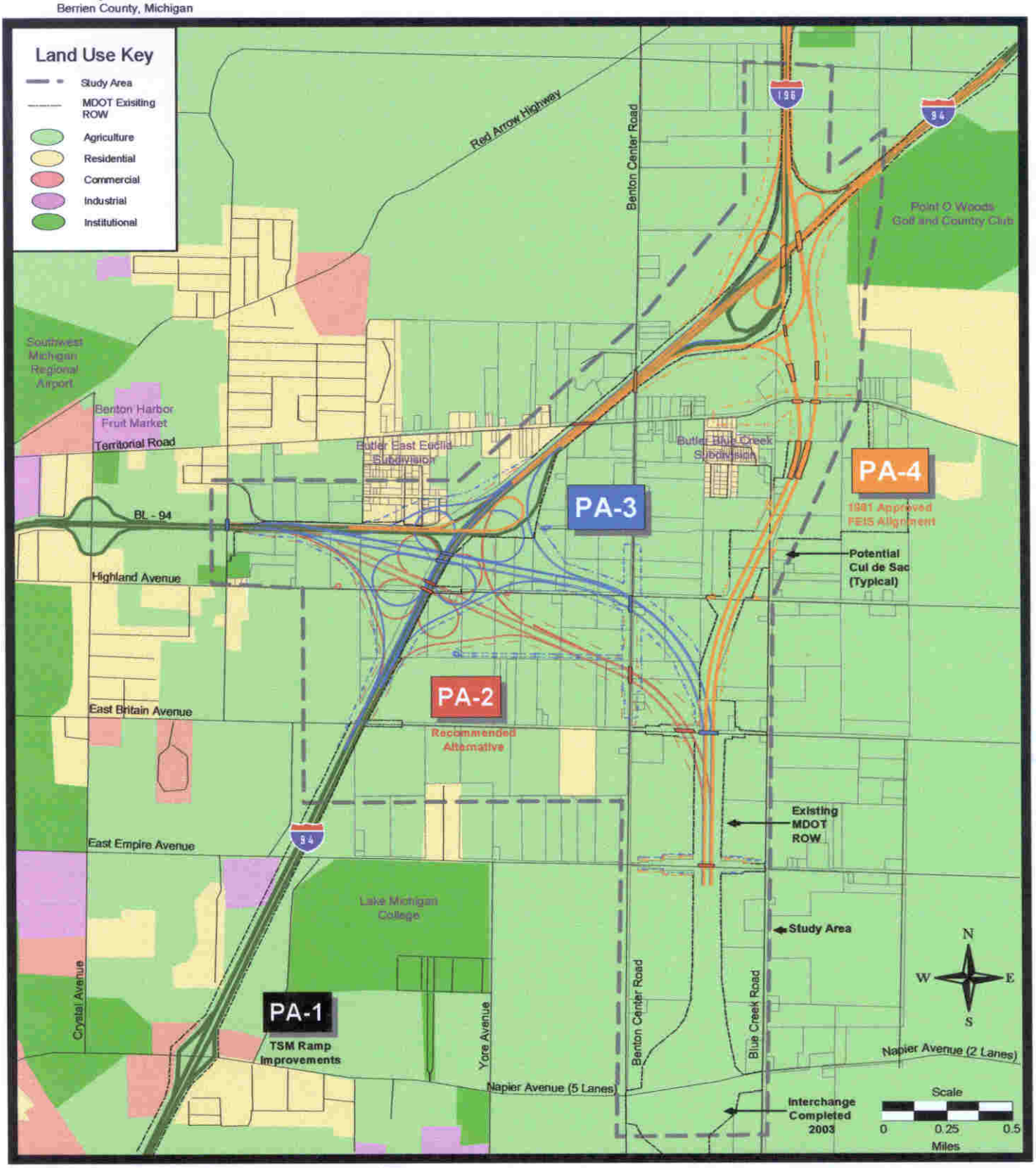
Impacts of No-Build Alternative: Current zoning in the study area will not be affected by the No-Build Alternative. The US-31 freeway interchange at Napier Avenue is part of the previously approved project and was completed in 2003. This interchange will enhance access to properties on Napier Avenue between US-31 and I-94. This will encourage commercial development in the southern part of the study area, expanding on existing commercial development located west of the I-94 interchange.

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 would be located primarily within an area zoned as rural. The western part of the I-94/BL-94 interchange would be located in a single-family residential zone although few residences exist in the area of impact. Through the provision of full access to Benton Harbor from both US-31 and I-94, Recommended Alternative PA-2 would be supportive of new development along BL-94. There are existing commercial and restricted industrial zones along and near BL-94 and Recommended Alternative PA-2 would be compatible with current zoning in the project area.

Composite Land Use Map

US-31 Freeway Connection to I-94

Project Location
Berrien County, Michigan



Source: Berrien County GIS and Benton Charter Township Land Use Map (1987)

Figure 5.1 Composite Land Use Map

5.2 Farmland Impacts

Farmland can be classified as “prime farmland,” “unique farmland,” or “farmland that is of statewide or local importance,” pursuant to the Farmland Protection Policy Act (PL 97-98) of 1981. Approximately 43% of the study area is considered prime farmland or unique farmland according to the Natural Resource Conservation Service (NRCS) Soil Surveys and Technical Guide. Unique farmland is defined as land other than prime farmland that is used for the production of specific high-value food and fiber crops such as citrus, tree nuts, olives, cranberries, fruits, and vegetables. Prime farmland has the best combination of physical and chemical characteristics for producing food, forage, fiber, and oilseed crops. Both unique and prime farmland cannot include urban built-up land or water bodies since these two are considered irreversible uses. **Figure 5.2** shows prime and or unique farmlands as classified by the NRCS.

Any federal action which may result in conversion of farmland to a non-agricultural use requires coordination with the NRCS. Coordination is accomplished through a Land Evaluation Site Assessment (LESA), which measures the relative value of farmland affected, evaluates direct and indirect conversions, and assigns a score according to criteria. Recommended Alternative PA-2 was determined to have low agricultural impacts. The Recommended Alternative received a total point value of 145 on a scale of 260 possible points. Scores of 145 are considered low impacts. Based upon the calculated total point value of 145, this project will not have a major impact on farmlands. The Form AD 1006, which evaluates the impacts of farmland conversion, is provided in **Appendix C.** No additional alignments or wetland mitigation sites will be considered without preparing a subsequent Farmland Conversion Impact Rating Form.

Impacts of No-Build Alternative: The No-Build Alternative will have limited agricultural impacts, although farmland conversion on and adjacent to Napier Avenue is anticipated and likely to increase if the existing US-31 freeway ends at Napier Avenue

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 will require additional land acquisition outside of the required right-of-way because the proposed alignment will result in various parcels becoming unusable or inaccessible. A parcel was considered inaccessible and/or unusable if the proposed highway construction split a parcel in such a way that the only remaining access to the property would be across another landowner’s property. These impacts can be reduced through land sales, exchanges, or access agreements between property owners.

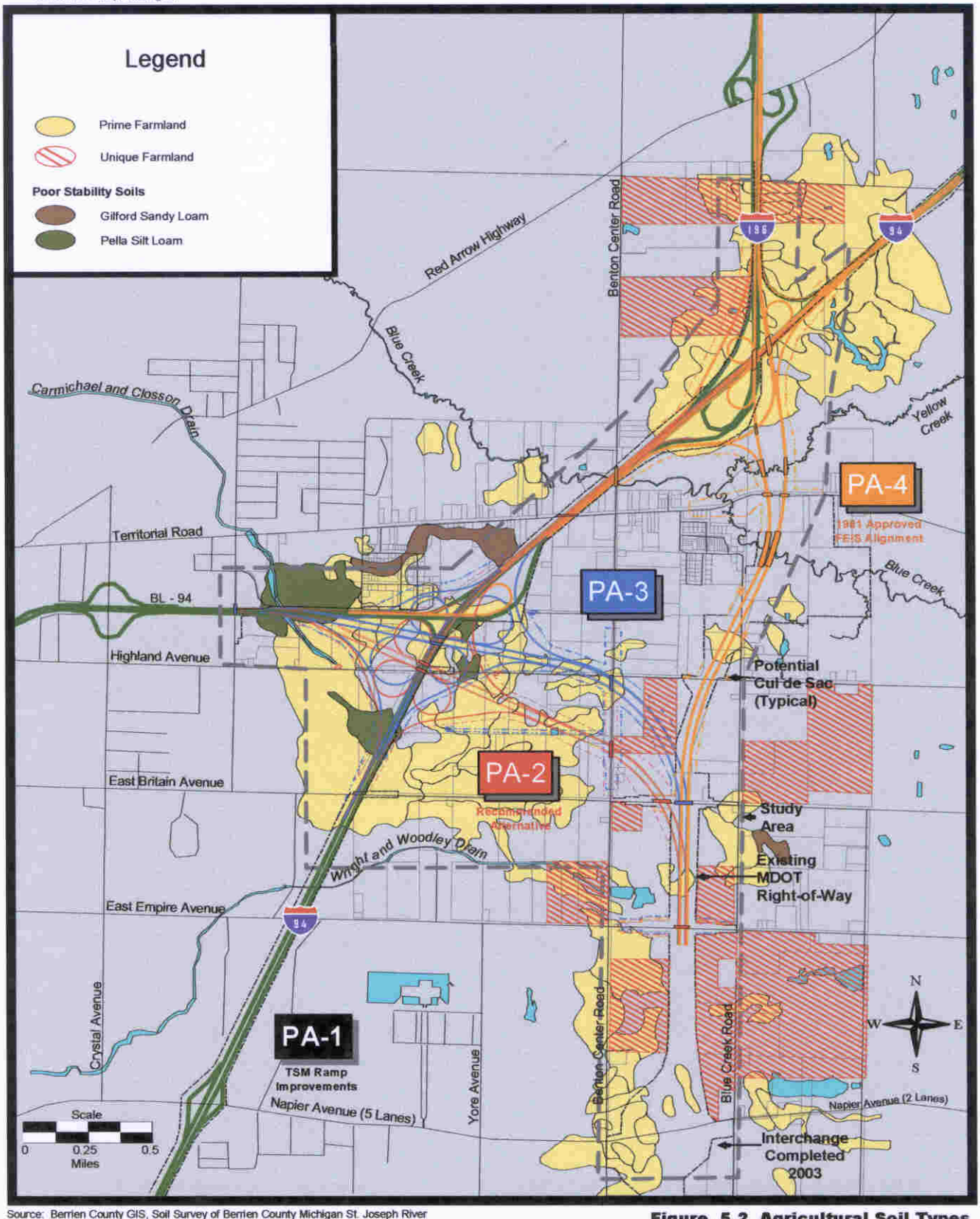
The number of farms throughout Michigan is in decline, although the average farm size has increased. Farmland preservation efforts aimed at avoiding the conversion of farmland to alternative land uses would be hampered by both the Recommended Alternative and the No-Build Alternative. Secondary development impacts are discussed in detail in the following section.

Table 5.2 summarizes agricultural impacts of Recommended Alternative PA-2 in relation to the number of parcels in agricultural use, number of parcels within the study area enrolled in the State of Michigan’s Farmland and Open Space Preservation Program (Part 361 of the Natural Resources and Environmental Act of 1994, as amended), total unique farmland acreage, total prime farmland acreage, total agricultural area, number of parcel splits, indirect impacted area, and total area of direct and indirect farmland impacts. Part 361 of the Natural Resources and Environmental Act of 1994, as amended provides property owners with tax credits to maintain

Project Location
Berrien County, Michigan

Agricultural Soil Types

US-31 Freeway Connection to I-94



Source: Berrien County GIS, Soil Survey of Berrien County Michigan St. Joseph River Conservation District, and US-31 Project Team field evaluations

Figure. 5.2 Agricultural Soil Types

agricultural uses. The Act allows for the release of property for lands acquired for highway improvements determined to be in the public interest. The Michigan Department of Transportation (MDOT) coordinates with the Michigan Department of Agriculture (MDA) and impacted property owners to identify properties or portions of properties to which this exemption applies. The large proportion of farmland within the study area not actively farmed, and the lack of enrolled farmsteads in Part 361 of the Natural Resources and Environmental Act of 1994, as amended, supports comments from local farmers that much of the land within the study area provides low yields. Mitigation measures for farmland impacts will include maintenance of farmland drainage.

Table 5.2 Farmland Impacts of Recommended Alternative PA-2

Practical Alternative	Number of Actively Farmed Parcels Impacted	Number of Parcel Splits	Number of Part 361 of the Natural Resources and Environmental Act of 1994, as amended (P.A.116) Parcels	Direct and Indirect Impacts on Unique and Prime Farmland (Acres)		Total ROW Impacts (Acres)	Indirect Impacts (Acres)	Total Direct and Indirect Impacts (Acres)
				Unique	Prime			
Recommended Alternative PA-2	46	1	0	1	215	403	74	477

Note: *Direct Impacts* refer to farmland that will potentially be acquired as right-of-way (ROW) for road improvement and drainage requirements. *Indirect impacts* include properties that are not required for ROW but may be left without access or may be remainders after ROW acquisition that are of a configuration that they alone are not economically viable for farming. These parcels could potentially be sold or leased to adjoining property owners for continued agricultural operations but have been counted as farmland impacts.

5.3 Economic Impacts

The study area is located within the economically depressed Benton Harbor area. The Benton Harbor area has been the focus of economic development efforts such as the establishment of state and local tax-free Renaissance Zones to encourage business growth. This is discussed further in **Section 5.4 Secondary and Cumulative Development Impacts**. As indicated in **Table 4.1** in **Section 4.5.1 Income Characteristics**, the income levels for Benton Charter Township and the study area are lower than the State of Michigan average, and poverty rates are higher. The study area contains few economic operations other than agriculturally based businesses and farm operations. The local communities are encouraging new capital investment in the region. Highway projects like US-31 can improve the economic conditions of an area through the creation of new access, reduced travel times, and direct capital investment, but these effects are largely dependent on a healthy regional economy.

Impacts of No-Build Alternative: The No-Build Alternative should have very little economic impact as it would not improve access and travel times or inject significant new capital investment into the Benton Harbor area. The addition of the missing I-94 to BL-94 loop ramp at the existing I-94/BL-94 interchange will provide improved access to BL-94. Travel times for through traffic on US-31 would worsen over time, creating new costs for freight operators, business people and travelers. New commercial development is expected along Napier Avenue with any of the alternatives as a result of the Napier Avenue/US-31 interchange being completed as part of an earlier project. Increased congestion as a result of a No-Build Alternative may stifle some of this growth in the long-term due to difficulty in accessing local businesses.

Impacts of Recommended Alternative PA-2: The construction of the Recommended Alternative PA-2 would have several economic benefits for the Benton Harbor area and the State of Michigan. Freight haulers traveling between Indiana and north or central Michigan would have a complete US-31 freeway route and would realize some potential savings on travel time related costs. Local freight transportation within the Benton Harbor and Berrien County area would also realize timesavings. Among the local economic entities that would benefit from the Recommended Alternative PA-2 connection to BL-94 are the Southwest Michigan Regional Airport and the Benton Harbor Fruit Market, both located just northwest of the project area.

The Southwest Michigan Regional Airport, owned by the cities of Benton Harbor and St. Joseph, supports a variety of charter, freight, corporate, and recreational users ranging from transportation of passengers to the movement of just-in-time cargo. The airport houses 40 privately owned aircraft, including a corporate fleet. Over 400 North American companies use the airport annually and its contribution to the local economy was estimated at $14 million per year in a 1999 MDOT study. The airport was approved for a runway extension in May 2003 and stands to benefit from the enhanced inter modal transportation access from a completed US-31 freeway, including a connection to BL-94.

With over 900 farm families from southwest Michigan utilizing the Benton Harbor Fruit Market, the economic impact of this wholesale market on the region has been estimated at between $15 and $25 million annually. Vendors at the market sell to produce suppliers, small and large chain grocery stores, and independent stores. Most of the produce buyers that purchase at the fruit market are located to the west (Chicago, Milwaukee, and Minneapolis) and to the south (Indianapolis). During the peak summer and fall months up to 100 semi-trucks and 150 farm trucks access the fruit market daily. Officials from the fruit market have stated that any alternative that completes the BL-94 interchange and provides a direct connection between BL-94 and US-31 would be beneficial to their enterprise through enhanced access.

The completion of US-31 as a continuous freeway into northern Michigan would also make access to tourism destinations in northern Michigan easier for travelers from Indiana and other areas to the south. Recommended Alternative PA-2 would also result in a direct investment in the Berrien County and Benton Harbor area economies as many of the jobs created and materials used in constructing the freeway should have local origins.

The construction of new freeways can have adverse economic effects on a local community. Development can be costly for local governments if it requires new service provisions, and if development is encouraged by new interchanges and highway locations outside of the developed parts of a community. However, Recommended Alternative PA-2 would not involve the creation of any new interchanges, only the reconstruction of the I-94/BL-94 interchange. It could help focus new development back toward the existing built-up areas of Benton Harbor and Benton Charter Township through its connection to Business Loop I-94. Recommended Alternative PA-2 should not have adverse economic impacts on existing businesses.

Recommended Alternative PA-2 would reduce the tax base of Benton Charter Township through the acquisition of further right-of-way (ROW). MDOT already owns right-of-way within the study area that was acquired for the original FEIS alignment (PA-4). Some additional land within the study area would be taken off the tax rolls as new ROW for Recommended Alternative PA-2 is acquired and some land would be returned to the tax rolls as MDOT disposes of the surplus existing ROW.

5.4 Secondary and Cumulative Development Impacts

This section discusses the potential for new development and the potential impacts of development patterns that are likely to emerge over time as a result of the alternatives for US-31. Also discussed are the combined cumulative impacts of US-31 improvements and the impacts of other improvements proposed within the area. Benton Charter Township and neighboring communities will have control over future development patterns through land use planning, zoning, and agreements with adjoining jurisdictions. Benton Charter Township is reviewing its land use plan to coordinate development connected with a US-31 freeway and is planning for new development along the recently widened segment of Napier Avenue between US-31 and I-94. As the planning horizon for Recommended Alternative PA-2 is the year 2025, the discussion of potential secondary and cumulative development impacts focuses on the period up to 2025.

Impacts of No-Build Alternative: Secondary development impacts associated with the No-Build Alternative will not be significant. Under a No-Build Alternative, future commercial development can be expected to occur around the Napier Avenue/I-94 interchange and along Napier Avenue in the southern part of the study area. This development will be aided by the access provided by the completion of the US-31 interchange at Napier Avenue. The No-Build Alternative would likely result in greater development near Napier Avenue and could result in greater secondary farmland and wetland impacts than would occur with a direct freeway connection to I-94. The rest of the study area exhibits few signs of new development. Other than a potential 16 lot residential subdivision on the northeast corner of Benton Center Road and East Britain Avenue, there are no other new developments currently proposed within the study area. Since overall population growth is slow within the Benton Harbor/St. Joseph area (refer to Section 4.5.1 Population of the DSEIS), widespread new development within the study area is unlikely.

Impacts of Recommended Alternative PA-2: Adverse secondary development impacts connected with Recommended Alternative PA-2 are not anticipated. Recommended Alternative PA-2 would create new access through the completion of the interchange between the US-31 freeway, I-94, and the Business Loop I-94. The wholesale Benton Harbor Fruit Market is also located near BL-94 and the enhanced access to the Benton Harbor area would be a positive influence on existing economic development initiatives in and around the area.

The Benton-Harbor/St Joseph metropolitan area has a designated tax advantaged Renaissance Zone, in operation since 1997, which consists of ten subzones. Three of the subzones, the Elisha Gray Enterprise Park, the I-94 Industrial Park, and the Meadowbrook and Yore subzone, are located in the vicinity of the proposed US-31 improvements, as illustrated in **Figure 2.6** in **Section 2.3.7 Economic Development**. Properties within the Renaissance Zone subzones may be exempt from state and local taxes for up to eight years. The program will be phased out in 2011 and taxes will be phased back in during the last three years of the program in 25% increments. The access provided by Recommended Alternative PA-2 will aid cumulative economic development efforts targeted for these Renaissance Zone subzones irrespective of their current tax status at the time of construction.

A fourth Renaissance Zone subzone, the Edgewater Redevelopment Area, is located in a central part of Benton Harbor/St. Joseph. This 400 acre development site has been the location for continued economic revitalization through a partnership between the cities of Benton Harbor and St. Joseph, Whirlpool Corporation, and the Cornerstone Alliance, a local economic development agency. The area includes 45 homes with space to expand to 110 lots. The area

also features more than 115,000 square feet of operational design, manufacturing, and office space with several new lots planned for development in the near future. The Cornerstone Alliance is currently working on the construction of a bridge over the Paw Paw River between Benton Harbor and St. Joseph which will provide direct access from the development to BL-94. This bridge is due to be let for construction in February 2004. The cumulative effects of the new bridge over the Paw Paw River and the connection which Recommended Alternative PA-2 provides to BL-94 will enhance the attractiveness of the Edgewater Redevelopment Area for future development.

Recommended Alternative PA-2 requires the closure of Highland Avenue and divides or acquires parts of 35 parcels of rural land. Although much of the land taken is not actively being farmed, this loss of rural land could contribute to a cumulative pattern of agricultural land loss within the study area and Benton Charter Township. The presence of a freeway could make it more difficult to resuscitate dormant agricultural operations within the study area on smaller or divided parcels, and the lack of municipal sewer and water services within the study area reduces the viability of conversion to other forms of economic development.

Recommended Alternative PA-2 may also result in secondary impacts to aquatic resources through the increase in impervious surfaces. Roadway maintenance, normal vehicular use, and new development could result in pollutants that may lower the quality of surface runoff to nearby streams and drains. Any new development connected with Recommended Alternative PA-2 may also impact additional wetland resources directly or indirectly. However, new development is anticipated principally adjacent to Napier Avenue and it is expected that secondary wetland impacts resulting from development at Napier Avenue are likely to be equal or greater for the No-Build Alternative. This development would result from terminating US-31 on a five-lane arterial (Napier Avenue) rather than the I-94 freeway, resulting in more through traffic utilizing Napier Avenue.

In May 2003, a Finding of No Significant Impact (FONSI) was approved for the Southwest Michigan Regional Airport for the extension of one runway and the creation of several runway safety areas that meet Federal Aviation Administration (FAA) standards. **Figure 2.6** in **Section 2.3.7 Economic Development** illustrates the approved airport expansion areas. The airport improvements will result in 225 residential and one commercial relocations. The airport relocations will take place in stages with the first 50 acquisitions and relocations already in progress. Phase II of the airport acquisition plan is tentatively scheduled to begin just after the start of Recommended Alternative PA-2 acquisitions and relocations. The airport relocations will take place in stages with 96 being the largest number forecasted to take place during any single phase of improvements. No exact timetable has been set for the airport improvements; however, the FAA has identified 2007 as the target date for when the runway safety areas must be improved. As a result, some of the airport relocations could occur at approximately the same time as the 14 relocations required for Recommended Alternative PA-2. The average State Equalized Value (SEV) for residences impacted by Recommended Alternative PA-2 is approximately 4 times higher than the average SEV of residences requiring relocation from the airport improvements. Due to the large difference in market values it is not anticipated that the relocations from both projects will compete for similar housing. The relocation plan found in **Appendix D** details the Michigan Department of Transportation's procedures for displacements due to transportation projects.

5.5 Social Impacts

The potential impacts to community facilities and services, neighborhoods, travel patterns, public safety, and minority and low-income residents were assessed for a No-Build Alternative and Recommended Alternative PA-2 as part of this US-31 Final Supplemental Environmental Impact Statement (FSEIS). This section presents all community impacts analyzed as well as the environmental justice methodology used per federal guidelines. There are minimal community impacts associated with the Recommended Alternative. There are no disproportionate impacts on minority or low-income populations associated with the No-Build Alternative or Recommended Alternative PA-2.

5.5.1 Community Impacts Assessment

This section describes the potential community impacts associated with each alternative. Impacts to a community can be beneficial or adverse and include, but are not limited to: changes to a neighborhood, separation of residences from community facilities such as community centers, and travel pattern changes due to road relocations or closings. Impacts to schools, recreation areas, religious and educational institutions, and emergency services such as police, fire, and ambulance are important components of this assessment. **Figure 4.1** shows the locations of community facilities within and adjacent to the study area.

Impacts of No-Build Alternative: There will be no direct impacts to any community facilities, schools, emergency services, churches, or neighborhoods with the No-Build Alternative. Travel patterns could be affected due to projected future traffic growth and congestion on Napier Avenue. Emergency service providers stated that the No-Build Alternative would not affect response times.

Impacts of Recommended Alternative PA-2: This alternative has the fewest community impacts of any freeway Build Alternative considered. There are no direct impacts to churches, neighborhoods, or community facilities with this alternative.

Due to the relocation of the I-94/BL-94/US-31 interchange to the south, Highland Avenue would be closed with a cul-de-sac east and west of I-94 and the bridge over I-94 would be removed. Emergency services located west of I-94 can use Territorial Road and East Britain Avenue as routes to Highland Avenue east of I-94. Emergency service providers stated that there would be minimal impacts to response times from Recommended Alternative PA-2.

5.5.2 Environmental Justice

Executive Order 12898, issued in 1994, requires every agency undertaking a transportation project that is fully or partially funded by the federal government to consider its impacts on minority and low-income populations. At the core of Environmental Justice are the following three fundamental principles.

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.

- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The 1981 FEIS was published prior to Environmental Justice provisions being enacted; therefore it contained no references to these requirements. Comparing the study area population with the populations of Benton Charter Township, Berrien County, and the State of Michigan reveals that Recommended Alternative PA-2 will not disproportionately impact minority or low-income populations. This section summarizes the Environmental Justice analysis, coordination, and impacts.

Study Area Ethnic Composition: Identifying the size and geographic location of minority groups within the study area was the first milestone in completing the Environmental Justice analysis for the US-31 freeway connection to I-94. Year 2000 US Census data sets were chosen as the primary data source for ethnic composition analysis. Analysis was conducted at the block group, township, county, and state levels.

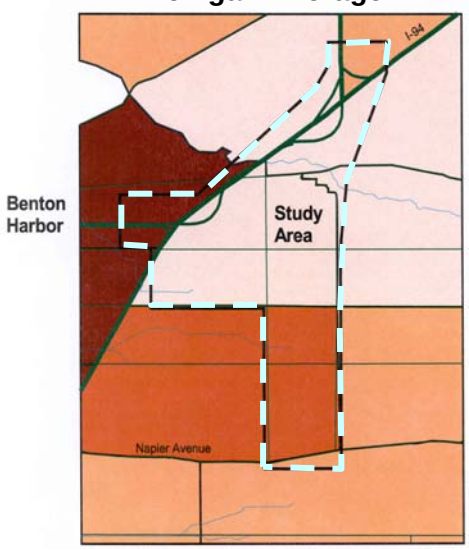
Within the study area the estimated percentage of minorities is 18.3%. This is compared with the Benton Charter Township average of 57.4%, Berrien County average of 21.9%, and the state average of 21.4%. The minority population in the study area is lower than at the township, county, or state levels and no disproportionate adverse impacts to minority populations are anticipated with the Recommended Alternative. **Figure 5.3** shows the geographic concentrations of minority populations in the block groups surrounding the study area relative to the state average. The central parts of the study area have a relatively low percentage minority population while the areas in the northwest and southwest have larger minority populations.

Income Composition: 2000 US Census data sets were used to identify the income characteristics of the US-31 study area. Analysis was conducted at the block group, township, county, and state levels.

Income composition developed from 2000 US Census data is presented in **Section 4.3.1 Income. Figure 5.4** illustrates the per capita income within the study area compared with the State of Michigan average. **Table 4.1** of **Section 4.5.1 Income Characteristics,** compares median household income, per capita income, and poverty rates within the study area to those of Benton Charter Township, Berrien County, and the State of Michigan. The northwestern section of the study area shows a higher concentration of low-income population than the rest of the study area. This block group includes the Butler-East Euclid Subdivision. No disproportionate adverse impacts to low-income populations are anticipated with Recommended Alternative PA-2.

Impacts of No-Build Alternative: A No-Build Alternative would provide limited economic benefits, but would increase traffic congestion and associated adverse impacts over time. Nine residences and one church in the Butler-East Euclid Subdivision would experience noise impacts exceeding FHWA guidelines from increased traffic on the existing road network and on I-94, between the Napier Avenue and I-94/I-196 interchanges.

Percent Minority Population of Study Area Compared to Michigan Average

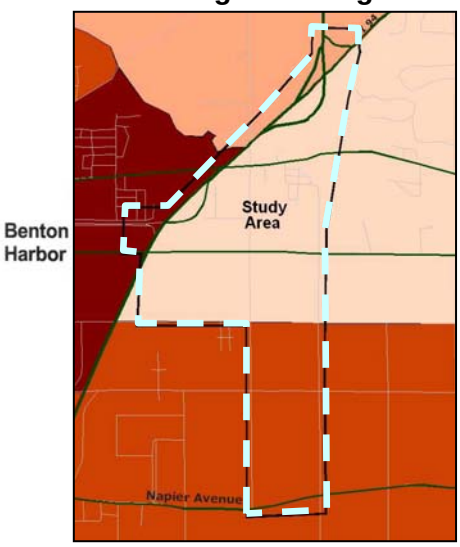


2000 Percent Minority Population of Block Groups Compared to Michigan Average of 21.4%

Source: US Census 2000

Figure 5.3

Per Capita Income of Study Area Compared to Michigan Average



2000 Per Capita Income of Block Groups Compared to Michigan Average of $22,168

Source: US Census 2000

Figure 5.4

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 would reroute traffic utilizing the I-94/BL-94 interchange further south of the Butler-East Euclid Subdivision. This would reduce noise and other adverse traffic impacts to these properties. Recommended Alternative PA-2 would have greater positive economic impacts to the Butler-East Euclid Subdivision and the overall Benton Harbor-St. Joseph area than would the No-Build Alternative. It would provide improved access to the region and short-term direct economic investment in the form of jobs and material purchases. Improved access will benefit the farmer's market, the airport, and redevelopment efforts within the Benton Harbor area, which has a higher than average minority and low-income population, and higher unemployment rates than does the State of Michigan. With Recommended Alternative PA-2, 12 residences and one church in the Butler-East Euclid Subdivision would experience noise impacts exceeding FHWA guidelines and MDOT criteria. This would result from increased traffic on the existing road network, and on I-94 between the Napier Avenue and I-94/I-196 interchanges.

Neighborhood Impacts and Public Involvement Efforts: To increase local awareness and participation by potentially affected residents, a special meeting was held for the residents of the Butler-East Euclid Subdivision. Prior to the meeting, door-to-door informational brochures were distributed to each area household by the Calvary Lighthouse Church. Brochures contained project information, a map of Practical Alternatives, contact information, and an announcement of the meeting, which was held in the neighborhood at the Calvary Lighthouse Church.

Approximately 27 individuals attended this meeting. Attendees included approximately four African Americans and 23 White/Caucasians. Comments from attendees generally expressed mixed support for the project.

A second neighborhood meeting was held at Benton Charter Township Hall for residents of the Blue Creek Subdivision located south of the intersection of Territorial and Blue Creek Roads. No relocations are proposed within the Blue Creek Subdivision for any alternative, but a meeting was held to update residents on the evaluation of alternatives because of the neighborhood's proximity to PA-4.

Advertised Public Meetings: To ensure full and fair participation by all potentially affected community interests including minorities and low-income groups, two public information meetings and a Public Hearing were held to present current project information and gather public input. These meetings were in addition to those held with the individual neighborhoods cited above or community interest groups like the Rotary Club. Prior to the Public Information Meetings and the Public Hearing a press release was issued and meeting information was sent out to local media and residents who had asked to be placed on the US-31 project mailing list. Other public involvement efforts have included a web page, toll-free numbers for contacting MDOT and consultant study team members, project newsletters, and public meeting brochures.

Throughout the US-31 study every effort was made to increase public involvement and awareness. Any additional environmental justice concerns or issues identified will be given special consideration and appropriate action will be taken.

5.6 Relocation Impacts

This section describes the various residential impacts associated with Recommended Alternative PA-2 and the No-Build Alternative. Potential relocations are identified and a Relocation Plan for displacements is presented in **Appendix D**. All relocation assistance will be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Resources will be made available without discrimination to all residential relocations. Under the requirements of this Act, no relocations will occur until it is shown that comparable housing is available in the area for relocation purposes. Replacement housing must be similar both in type and price range. As discussed in **Section 5.4 Secondary and Cumulative Development Impacts**, relocations from the Southwest Michigan Regional Airport expansion project will coincide with Recommended Alternative PA-2 relocations. A study of the housing market in the project area indicates that a sufficient number of replacement homes and rentals will be available throughout the relocation process.

Impacts of No-Build Alternative: There are no anticipated residential, commercial, or community facility relocations associated with the No-Build Alternative.

Impacts of Recommended Alternative PA-2: Residential relocations associated with Recommended Alternative PA-2 consist of 14 single-family residential dwellings.

5.7 Joint Development Impacts

Joint development initiatives to enhance non-motorized facilities or transit services are not being incorporated as a part of the alternatives. The lack of density in land use within most of the areas impacted by the alternatives suggests there would be little usage of non-motorized facilities built along the right-of-way in conjunction with the freeway. Berrien Bus is the transit organization serving the study area. It provides limited transit service in the form of a dial a ride service operating 12 hours per day. The population of the study area is dispersed and not of adequate size for viable fixed transit facilities.

As discussed in **Section 5.4 Secondary and Cumulative Development Impacts**, Recommended Alternative PA-2 will require residential relocations and may create a joint development issue with the approved Southwest Michigan Regional Airport expansion plans. Although there are sufficient vacant properties within Benton Charter Township and Berrien County to provide replacement housing for both projects (refer to **Section 5.6**), finding suitable matches will require an extra coordinated effort between MDOT and the local real estate community.

The airport improvements will also result in increased noise levels and approximately five acres of wetland impacts. These impacts were not viewed as significant in the airport FONSI. The airport Environmental Assessment (EA) stated that "airport improvements...combined with other planned projects in the area, would contribute to the overall economic strength of the region in terms of employment, tax revenue, and infrastructure improvements." Construction of Recommended Alternative PA-2 will also assist with these joint economic development efforts.

5.8 Non-Motorized Impacts

This section discusses the potential impacts on pedestrians, cyclists, and other non-motorized transportation users within the US-31 study area.

Impacts of Recommended Alternative PA-2: A potential impact associated with Recommended Alternative PA-2 is reduced access for pedestrians and cyclists where roads are closed either permanently or during construction. East Empire Avenue and East Britain Avenue will be bridged over the new roadway, while Highland Avenue will feature a cul-de-sac both east and west of I-94.

There are no existing public sidewalks, non-motorized paths, or bike paths within the proposed right-of-way of Recommended Alternative PA-2. Local roads provide the only travel network for pedestrians and cyclists. Minor pedestrian and bicycle use by residents of the local roads represent the principal non-motorized forms of transportation in the study area.

5.9 Air Quality

The US Environmental Protection Agency (USEPA) is responsible for adopting the National Ambient Air Quality Standards (NAAQS) for specific pollutants. Under the authority of the Clean Air Act and the 1990 Clean Air Act Amendments (CAAA) [42 USC 7401 *et. seq*.], a set of primary and secondary ambient air quality standards was established. The NAAQS were established for sulfur oxides (SO_x, measured as SO_2), particulate matter 10 microns and smaller in diameter (PM_{10}), carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), and lead. The primary standards are established at levels intended to protect the public health. Secondary

standards are intended to protect the public welfare and are based on a pollutant's effect on vegetation and other materials.

The primary pollutants from motor vehicles are unburned hydrocarbons, nitrogen oxides NO_x, and CO. Hydrocarbons (HC) and NO_x can combine in a complex series of reactions catalyzed by sunlight to produce photochemical oxidants such as ozone and NO_2. Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources. These pollutants are regional problems. This project is located in an area that has been designated as in attainment of the National Ambient Air Quality Standards (NAAQS) for ozone.

Carbon monoxide is a colorless and odorless gas, which is the product of incomplete combustion, and is the major pollutant from gasoline fueled motor vehicles. CO emissions are greatest from vehicles operating at low speeds and prior to complete engine warm-up (within approximately eight minutes of starting). Congested urban roads, tend to be the principal problem areas for CO. Because the averaging times associated with the CO standards are relatively short (one and eight hours), CO concentrations can be modeled using simplified "worst-case" meteorological assumptions.

Based on the above discussion, and in accordance with MDOT, FHWA, and USEPA procedures, the air quality impact analysis for this project is limited to a microscale analysis of ambient CO concentrations. The criteria for adverse impacts are in exceedance of the NAAQS for CO at the modeled receptor locations.

5.9.1 Existing Air Quality

The US-31 interchange at Napier Avenue was selected for air quality carbon monoxide (CO) analysis as it was determined to be representative of the worst case air quality impacts that could be anticipated for any alternative. This selection is due to forecasted traffic volumes and the proposed use of signalization at Napier Avenue that would result in emissions from idling traffic.

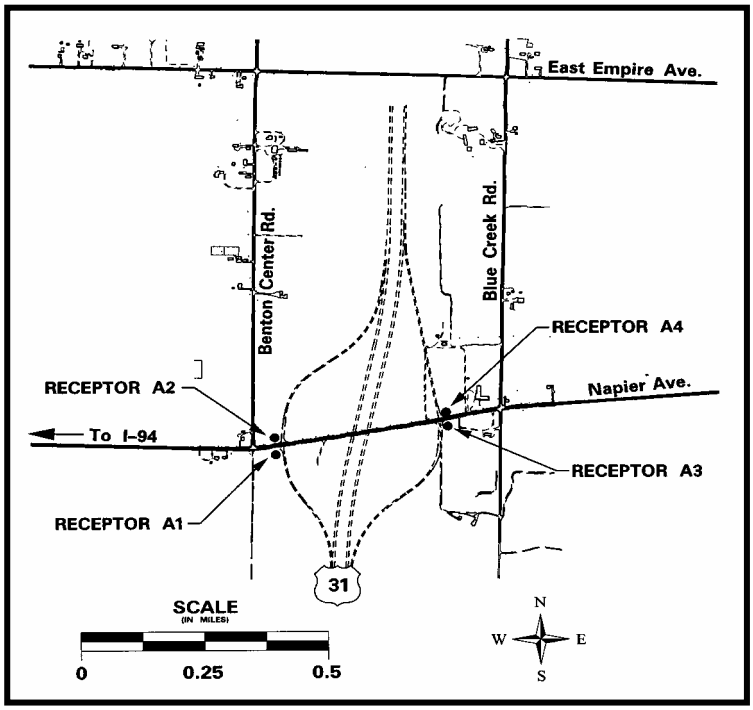


Figure 5.5 Air Quality Receptor Locations

The interchange at Napier Avenue will provide access in all directions between Napier Avenue and US-31. The off-ramp from northbound US-31 to Napier Avenue will be signalized. The modeled results for existing air quality at the existing US-31/Napier Avenue interchange are shown in **Table 5.3** and the receptor locations are shown in **Figure 5.5**.

Table 5.3 Existing CO Concentrations

Modeling Receptor	Modeled CO Concentrations, ppm* Existing 2001	
	Peak Hour	8 Hour
A1	3.5	3.1
A2	3.5	3.1
A3	3.4	3.1
A4	3.3	3.1

*The NAAQS for CO are 35 ppm for a one hour average, and 9 ppm for an eight hour average. Concentrations include an ambient background level of 3.0 ppm.

5.9.2 Future Air Quality Impacts

Computer modeling was conducted at the US-31/Napier Avenue interchange to determine the anticipated air quality impacts for the No-Build and Build options. The modeling was conducted in accordance with the specifications and assumptions set forth in **Appendix B.** The years that were studied were 2003 and the US-31 design year of 2025; modeling takes into account emissions that would result from traffic projected to be utilizing the new freeway and Napier Avenue in these years.

Based upon the results of the carbon monoxide analysis, all CO concentrations would be below the NAAQS for all alternatives through the 2025 design year. This includes the 35 parts per million (ppm) NAAQS for the one-hour average level and the 9 ppm standard for an eight-hour average. The results of the microscale air quality analysis are shown in **Table 5.4**.

Table 5.4 Microscale Air Quality Analysis

Modeling Receptor	Maximum CO Concentrations, ppm*							
	Existing 2001		Build Year 2003		Build Year 2025		No-Build 2025	
	Peak Hour	8 Hour	Peak Hour	8 Hour	Peak Hour	8 Hour	Peak Hour	8 Hour
A1	3.5	3.1	6.7	3.9	7.7	4.2	5.2	3.6
A2	3.5	3.1	6.3	3.8	7.2	4.1	5.7	3.7
A3	3.4	3.1	6.4	3.9	6.5	3.9	6.4	3.9
A4	3.3	3.1	5.2	3.6	5.1	3.5	5.9	3.7

*The NAAQS for CO are 35 ppm for a one hour average, and 9 ppm for an eight hour average. Concentrations include an ambient background level of 3.0 ppm.

5.9.3 Air Quality Construction Impacts and Mitigation

Construction contractors will be required to comply with federal, state, and local laws, regulations, and rules governing the control of air pollution during construction. Dust should be controlled during construction to avoid detrimental impacts to the health, safety, welfare, or comfort of any person, or damage to any property or business by such methods as ground watering and careful control of stockpiles. All bituminous and Portland Cement concrete proportioning plants and crushers must meet the requirements of Michigan's applicable Air Pollution Control Rules with regard to permitting, emission control devices, and fugitive dust control plans. Based on expected compliance with applicable air pollution control requirements and the relatively short duration of construction activities, no adverse impacts to air quality are expected during construction.

5.10 Noise Analysis

5.10.1 Existing Noise Conditions

Traffic noise levels are expressed in decibels using the A scale (dBA). The A scale discriminates against both high and low frequency sound levels in a manner which simulates the human hearing process. The most common method of discussing traffic noise levels uses the descriptor L_{eq}. An L_{eq} can be thought of as an average noise level over a given period of time based on energy or sound pressures. The period of time for this analysis is one hour and will use the descriptor $L_{eq(1h)}$.

Existing noise levels were developed based on field measurements (**Table 5.5**) and adjusted for peak hour traffic volumes. Existing noise levels along the study area range from 46 to 73 dBA $L_{eq(1h)}$. Five residences and one church are presently exposed to noise levels ranging from 66 to 73 dBA $L_{eq(1h)}$. These peak hour noise levels approach or exceed the FHWA Noise Abatement Criteria (NAC). See **Appendix B** for discussion on the background, assumptions, methodologies, and findings of the noise analysis and maps of receptor sites.

Table 5.5 Measured Existing Noise Levels

Field Site #	Sites and Distance	Date	Start Time	Duration	Traffic*				Noise Level, dBA $L_{eq(1h)}$
					A	MT	HT	Speed (mph)	
1	Calvary Lighthouse Church between Roland and Baldwin Ave. 136 ft north of BL-94.	11/7/2001	8:55	20 min.	81	3	13	65	63
2	Residence, 175 ft north of I-94 and 80 ft east of Benton Center Rd.	11/7/2001	9:35	20 min.	581	35	245	70	65
3	Residence, 70 ft north of Territorial Rd. and 2,450 ft east of Blue Creek Rd.	11/7/2001	10:16	20 min.	37	4	2	35	55
4	Residence, 15 ft west of Fieldtree Rd. and 70 ft north of Blue Creek Rd.	11/7/2001	10:48	20 min.	5	0	0	45	43
5	Vacant land, 25 ft west of Blue Creek Rd. and 580 ft north of Highland Ave.	11/7/2001	11:20	20 min.	1	1	0	25	44
6	Residence, 50 ft south of Highland Ave. and 2,190 ft west of Benton Center Rd.	11/7/2001	11:54	20 min.	6	1	0	45	53
7	Vacant land, 80 ft east of Benton Center Rd. and 650 ft north of East Britain Ave.	11/7/2001	12:27	20 min.	36	4	0	45	58
8	Proposed Orchard Hills Subdivision, cul-de-sac approximately 920 ft east of Benton Center Rd. (Lot 9)	11/7/2001	12:56	10 min.	--	--	--	--	45
9	Residence, 75 ft north of East Britain Ave. and 575 ft west of Blue Creek Rd.	11/7/2001	13:20	20 min.	12	0	0	45	49
10	Residence, 90 ft west of Blue Creek Rd. and 610 ft south of East Empire Ave.	11/7/2001	14:24	20 min.	10	0	0	45	45

*Autos (A) defined as 2-axle, 4-tire; medium trucks (MT) as 2-axle, 6-tire; heavy trucks as 3 or more axles.
Source: Consultant Counts, November 2001

5.10.2 Future Noise Conditions

The FHWA Traffic Noise Model, V 1.1 (TNM®)[2] was used to forecast design year build traffic noise levels within the study area. The noise measurement data and projected changes in traffic volumes were used to develop existing peak hour and No-Build noise levels. Design year build traffic volumes and vehicle mixes were used in the 2025-build analysis. The results of the modeling are presented in **Table 5.6**.

Noise impacts are defined following FHWA Guidelines as a property approaching or exceeding 67 dbA $\mathbf{L_{eq(1h)}}$ for exterior noise or having an increase in noise level of ten or more dBA over the No-Build scenario.

Impacts of No-Build Alternative: The No-Build noise levels in Table 5.6 were developed based on field data and adjusted for peak hour No-Build traffic volumes. Forecasted No-Build noise levels along the study area range from 48 to 75 dBA $L_{eq(1h)}$. Eighteen residences and one church would be exposed to noise levels ranging from 66 to 75 dBA $L_{eq(1h)}$. These peak hour noise levels approach or exceed the FHWA NAC.

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 would expose 23 residences and one church to design hour noise levels ranging from 66 to 78 dBA $L_{eq(1h)}$. These peak hour noise levels approach or exceed the FHWA NAC.

5.10.3 Noise Abatement Measures

Various methods can be utilized to mitigate noise impacts. These include reduction of speed limits, restriction of truck traffic to specific times of the day, total prohibition of trucks, alteration of horizontal and vertical alignments, property acquisition for construction of noise barriers or berms, acquisition of property to create buffer zones to prevent development that could be adversely impacted, and noise insulation of public use or nonprofit institutional structures.

Reductions of speed limits, although acoustically beneficial, are seldom practical unless the design speed of the proposed roadway is also reduced. Restriction or prohibition of trucks is adverse to the project purpose. Design criteria, including maximum grades, and recommended termini for the proposed project prevent substantial horizontal and vertical alignment shifts that would produce noticeable changes in the projected acoustical environment. The proposed vertical alignments are already limited to maximum grades of 3% for the mainline and 4% on all ramps.

Construction of noise barriers was the primary mitigation alternative viewed as being potentially applicable. Noise abatement by barriers is considered by MDOT according to the guidelines in **Appendix B**. The implementation of barriers must be feasible and reasonable. To be effective, noise walls must be a minimum length, extending well beyond the mitigated structures without breaks. A noise barrier for Recommended Alternative PA-2 was analyzed to provide mitigation for the Butler-East Euclid Subdivision. This analysis indicated that the barrier did not meet MDOT criteria of reasonability.

Given the low density of residential development that exists throughout the study area, there are no additional areas that meet MDOT's criteria for a noise wall or earthen barrier to be considered.

Table 5.6 Noise Impact Evaluation

Receiver Location	Land Use [1] Type	NAC ($L_{eq(1h)}$)	Noise Level, $L_{eq(1h)}$ (dBA)				
			Existing (2001)	No-Build (2025)[2]	Recommended Alternative PA-2 (2025) [2]	PA-3 (2025) [2]	PA-4 (2025)[2]
N1	Res. (3)	67	65	**72**	**68** (-4)	**68** (-4)	**68** (-4)
N2	Masonic Temple	67	63	65	64 (-1)	64 (-1)	64 (-1)
FS 10	Res. (3)	67	50	52	55 (+3)	55 (+3)	54 (+2)
FS 9	Res. (2)	67	53	55	56 (+1)	61 (+6)	60 (+5)
FS 8	Res. (3)	67	48	50	Relocated	64 **(+14)**	59 (+9)
FS 7	Res. (1)	67	61	63	Relocated	57 (-6)	54 (-9)
N3	Res. (2)	67	50	52	55 (+3)	56 (+4)	60 (+8)
N4	Res. (2)	67	50	52	55 (+3)	56 (+4)	60 (+8)
FS 5	Res. (3)	67	50	52	53 (+1)	54 (+2)	65 **(+13)**
N5	Res. (1)	67	50	52	54 (+2)	55 (+3)	**66 (+14)**
N6	Res. (2)	67	50	52	54 (+2)	55 (+3)	64 **(+12)**
FS 4	Res. (4)	67	46	48	53 (+5)	53 (+5)	59 **(+11)**
FS 3	Res. (1)	67	58	60	55 (-5)	55 (-5)	63 (+3)
N7	Res. (1)	67	49	51	58 (+7)	58 (+7)	63 **(+12)**
N8	Res. (5)	67	57	59	59 (0)	59 (0)	61 (+2)
N9	Res. (2)	67	63	65	**68** (+3)	**68** (+3)	**67** (+2)
FS 2	Res. (2)	67	**68**	**70**	**75** (+5)	**75** (+5)	**75** (+5)
N10	Res. (1)	67	**66**	**68**	**73** (+5)	**73** (+5)	**72** (+4)
N11	Res. (1)	67	**71**	**73**	**78** (+5)	**78** (+5)	**78** (+5)
N12	Res. (1)	67	**73**	**75**	**75** (0)	**75** (0)	**74** (-1)
N13	Res. (1)	67	65	**67**	**67** (0)	**67** (0)	**67** (0)
FS 6	Res. (2)	67	60	62	64 (+2)	Relocated	58 (-4)
FS 1	Church	67	**67**	**69**	**67** (-2)	Relocated	**69** (0)
N14	Res. (5)	67	65	**67**	**68** (+1)	Relocated	**67** (0)
N15	Res. (3)	67	63	65	**66** (+1)	**67** (+2)	65 (+2)
N16	Res. (4)	67	64	**66**	**66** (0)	Relocated	**66** (0)

1. Res.-Residential (number of units represented)
2. 2025 Noise levels presented as modeled value (and change from existing).
3. Bold numbers represent exceedances of FHWA and MDOT noise abatement criteria.
4. Relocated means that the property will require relocation as a result of the right-of-way for the alternative.

5.10.4 Construction Noise

The major construction elements of this project are expected to be demolition, earth moving, hauling, grading, paving, and bridge construction. General construction noise impacts for passersby and those individuals living or working near the project can be expected, particularly from demolition, earth moving, and paving operations. Considering the relatively short-term nature of construction noise, impacts are not expected to be substantial. The transmission loss characteristics of nearby structures are believed to be sufficient to moderate the effects of construction noise.

5.10.5 Noise Analysis Conclusion

Noise abatement by barriers is considered by MDOT using a set of guidelines presented in **Appendix B**. The guidelines require that implementation of barriers be feasible and reasonable. MDOT's noise abatement procedures and rules state that the type of noise abatement feature must provide the benefit dwellings with a reduction of 5 dBA $L_{eq(1h)}$. Reasonability is defined primarily by economic considerations, with the cost per residence benefited not to exceed $34,200. Based on the study completed, mitigation of noise impacts appear to be feasible but not reasonable. If the noise conditions change substantially during final design, noise abatement measures will be further reviewed.

5.11 Water Quality Impacts

Impacts to groundwater quality can result from potential increases in pollutants entering drainage systems and/or contaminating aquifers and other well water sources. According to the US Geological Survey Water-Supply Paper 2437, this area receives approximately 14.2 inches of recharge a year. With such a high recharge rate, surface water contamination can potentially impact groundwater supplies rather rapidly. Most of the properties located within the study area rely on wells for drinking water and septic systems for sewage disposal.

Impacts of No-Build Alternative: The No-Build Alternative would introduce a minimal increase in impervious pavement for the completion of the missing loop ramp at the exiting I-94/BL-94 interchange. To the extent that traffic increases within the US-31 and Napier Avenue corridors, there could be an increase in discharged pollutants related to spills from motorized vehicles and everyday pavement pollution runoff. No groundwater quality impacts are anticipated as a result of the No-Build Alternative.

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 would have the potential for minor impacts on groundwater quality as a result of potential spills of pollutants (fuel, oil) during and after construction, or increased runoff during operation of the freeway. The glacial overburden (a subsurface layer consisting of an impermeable mixture of clay and silt with minor amounts of sand and gravel) is the primary aquifer source in the study area. The glacial overburden does not contain any significant aquifers from a regional perspective. In some areas, a lack of a thick layer of clay may leave the glacial overburden vulnerable to contamination from spills during or after construction of any of the Build Alternatives. Beneath the glacial overburden, a layer of Coldwater or Sunbury shale exists. Limited water exists within this layer and what does exist has too high of a saline content for drinking water.

Recommended Alternative PA-2 would cross the Carmichael and Closson and the Wright and Woodley Drains and would impact numerous properties with water wells and septic systems. Disruption of utility systems during right-of-way preparation and/or construction could result in inadvertent discharges to groundwater. Such impacts would likely be minor, since small discharge volumes would be involved and methods to locate and abandon subsurface utilities will be implemented.

Mitigation: Potential impacts to groundwater resources will be reduced by sealing water wells and septic systems within the right-of-way prior to construction. Sealing will be performed per MDOT Road & Bridge Standard Plan R-96-C, as approved by the Michigan Department of Community Health. Impacted septic lines will be sealed with concrete grout at the basement level. Where the roadway sub-base intersects the water table, under drains will be constructed

along the pavement to intercept horizontal seepage unless contaminated. Flow and siltation will be controlled through a variety of storm water management practices.

Impacts to groundwater resources may also occur due to exposure of permeable groundwater recharge areas to contaminants during construction. No fuel storage or equipment will be staged in any identified groundwater recharge area. Secondary containment, per state and federal regulations, will be provided for the storage and handling of all fuel and hazardous materials. Inadvertent spills will be immediately contained and trained emergency response personnel will remove contaminants.

5.12 Wetland Impacts

As illustrated in **Table 5.7**, prior segments of the US-31 freeway constructed in accordance with the approved 1981 FEIS had wetland impacts of 41.7 acres (excluding the current project) and required 59.2 acres of wetland mitigation. Entering into the last segment of the project (Napier Avenue to I-94), the Michigan Department of Transportation (MDOT) had already constructed 63.1 acres of replacement wetlands to satisfy mitigation requirements, leaving a credit of 3.9 acres for the project to date.

Table 5.7 Wetland Impacts Matthew Road to Napier Avenue

Action Taken	Wetland Impacts (acres)
Total wetland impacts from prior segments	41.7
Total wetland mitigation required for prior segments	59.2
Total replacement wetlands created	63.1
Wetland surplus available for this and other projects	3.9

Wetlands within the current project area are classified as forested, scrub-shrub, emergent, and wet meadow. Within the study area, 81 wetland areas were delineated and assessed. Recommended Alternative PA-2 would impact wetlands regulated pursuant to Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NREPA), PA 451 of 1994, as amended and Section 404 of the Clean Water Act. The regulatory status of each wetland was not considered in assessing functions, benefits, uses, or impacts. This analysis proposes that mitigation will be provided for all wetlands impacted. The wetland delineation identified a number of wetlands that did not exist, or were not cited in the 1981 FEIS. Descriptive and floristic quality assessments of plant communities were used to identify and describe functions, values, benefits, and uses the wetlands provide to both biotic resources and humans. Due to the sensitive nature of the habitat, wetlands associated with the Blue Creek Fen south of Territorial Road were not delineated. Boundary lines and acreages for these wetlands were estimated using aerial photography, visual observation, United States Department of Agriculture (USDA) soil survey maps, and general knowledge of the area. Wetlands found within the Blue Creek Fen are not impacted by the Recommended Alternative. **Table 5.8** provides a summary of the impacts associated with Recommended Alternative PA-2. Total impacts for all alternatives are in **Table I** in the **Executive Summary**. **Figure 5.6** illustrates the location of wetlands in relation to the alternatives for US-31.

Table 5.8 Wetland Impacts by Alternative

Alternative	Number of Wetland Complexes Impacted	Acres of Wetland Impacted			Acres of Higher Rated Wetlands Impacted*
		Emergent, Scrub-Shrub and Wet Meadow	Forested	Total	
No-Build	1	0.3	0.0	0.3	0.0
Recommended Alternative PA-2	17	4.0	8.2	12.2	5.1
*Based on Visual and Floristic Quality Assessment, included in totals to the left.					

Impacts of No-Build Alternative: The No-Build Alternative would impact 0.3 acres of low quality wetland located in one wetland complex.

Impacts of Recommended Alternative PA-2: As a part of the alternatives development for this project, wetland impacts were evaluated and minimized through a series of agency reviews and comments. The selection of PA-2 as the Recommended Alternative was due in part to its low impact to wetland complexes relative to PA-4. Agency comments from the review of the Draft Supplemental Environmental Impact Statement (DSEIS) concurred with the selection of PA-2 as the Recommended Alternative, but requested that wetland impacts be minimized where possible. As a result, two ramps (ramps F and G) of the I-94/BL-94/US-31 interchange have been reconfigured to provide tighter radii loop ramps and the associated outer ramps have been pulled tighter to the mainline freeway to provide a smaller overall footprint (**Figure 3.5**). This will also preclude the addition of a potential future southbound flyover ramp within the right-of-way which was not warranted for forecasted 2025 traffic volumes. This modification has resulted in a one acre reduction in impacts, all of which is high quality wetlands. The beneficiaries of the tighter loop ramps are wetland complexes 23 and 24. There is an impact reduction of 50% for complex 23 and a total avoidance of complex 24.

The reconfigured Recommended Alternative PA-2 impacts 12.2 acres of wetlands located in 17 wetland complexes, including 5.1 acres of high quality wetlands. Five wetland complexes would be partially impacted, three fragmented, and nine removed by this alternative. The majority of wetland complexes impacted by this alternative are associated with drains or isolated pockets surrounded by agricultural lands. During final design, opportunities for further reduction of wetland impacts will be investigated and implemented where possible. **Table 5.9** compares the wetland impacts associated with Preferred Alternative PA-2 as proposed in the DSEIS with those of the modified Recommended Alternative PA-2 presented within this document.

Project Location
Berrien County, Michigan

Environmental Constraints

US-31 Freeway Connection to I-94

Source: Berrien County GIS and US-31 Project Team field evaluations

Figure. 5.6 Environmental Constraints

Table 5.9 Comparison of Original and Modified Recommended Alternative PA-2

Impacts of Recommended Alternative PA-2	Draft SEIS	Final SEIS
Total acres of wetland impacts	13.2 acres	12.2 acres (7.6% reduction)
Total acres of high quality wetland impacts	6.1 acres	5.1 acres (16.4% reduction)
Total number of wetland complexes impacted	18	17
Total number of partially impacted wetland complexes	6	5
Total number of removed wetland complexes	9	9

Overall, the wetland complexes within the proposed right-of-way for Recommended Alternative PA-2 have low Floristic Quality Index (FQI) values indicating that plant communities were not floristically significant. A FQI takes into account the total number of different plants species in an area and the tendency of the plants to represent an unaltered pre-settlement natural community in assessing the quality of a habitat. These wetlands have low potential to harbor threatened and endangered plant species but still provide various functions, such as storm water detention and nutrient uptake.

Mitigation Requirements of the No-Build Alternative: The No-Build Alternative would result in 0.3 acres of wetland impacts. Mitigation will be done in compliance with previously agreed upon wetland mitigation ratios.

Mitigation Requirements of Recommended Alternative PA-2: Wetland impacts associated with the last phase of the US-31 project as addressed by this document, will be mitigated by preserving 222.5 acres of high quality wetlands located within three fen complexes: the Blue Creek Fen located in the Paw Paw River sub-watershed (18.5 acres), the Tamarack Fen located in the St. Joseph River watershed (118 acres), and the Liberty Fen located off site in the Grand River watershed (86 acres).

In accordance with the administrative rules for Part 303, Wetlands Protection, the preservation of existing wetland may be used as mitigation if the wetland to be preserved performs exceptional physical or biological function, is under a demonstrable threat of loss or substantial degradation due to human activities, and will be protected in perpetuity (deed restrictions or conservation easements). For wetland preservation, a 10:1 ratio applies whereby one acre of wetland is given for ten acres of preserved wetland.

At a 10:1 replacement ratio, the proposed 222.5 acres of high quality wetlands will generate a preservation credit of 22.25 acres. Of the 22.25 acres, 13.65 acres are located within the same watershed as the impacted wetland complexes (St. Joseph River Watershed 11.8 acres, and the Paw Paw River sub-watershed 1.85 acres).

MDOT provided funding to The Nature Conservancy (TNC) for the purchase of two fen complexes (Tamarack Fen and the Liberty Fen) through an agreement that TNC would provide wetland and habitat protection in perpetuity. MDOT currently owns 113 acres of the Blue Creek Fen. The Tamarack Fen and the Liberty Fen include a perimeter buffer zone of existing vegetation adjacent to the wetland. These fens originally purchased to satisfy the wetland and

endangered species mitigation requirements of the 1981 FEIS preferred alignment are proposed as mitigation for Recommended Alternative PA-2. Both TNC and the US Fish and Wildlife Service (USFWS) identified each of the properties as potential habitat for the endangered Mitchell's satyr butterfly.

Table 5.10 summarizes the impacts and mitigation requirements for the overall US-31 project from Matthew Road north to I-94/I-196, including the current study area north of Napier Avenue. The proposed mitigation plan would provide wetland preservation credits of 22.25 acres in addition to 63.1 acres of previously created replacement wetlands for a total of 85.35 acres of wetlands provided as mitigation. The current project requires an additional 12.2 acres of wetland mitigation beyond the 59.2 acres of mitigation required from past US-31 segments. Under the proposed wetland mitigation plan a surplus of 13.95 acres of wetlands would be available to MDOT to be used for this and other projects.

As illustrated in **Table 5.10**, 53.9 acres of wetlands will be impacted by the construction of US-31 (from Matthew Road to north I-94/I-196), and 63.1 acres of new wetlands have been created. This results in "no net loss" of wetlands for the project as a whole. Wetland mitigation ratios have varied over the life of the project.

Table 5.10 Project Wide Wetland Mitigation Summary

Matthew Road north to I-94/I-196	Wetland Impacts and Mitigation (acres)
Wetland Impacts	
Total wetland impacts of current project	12.2
Total wetland impacts of prior segments	41.7
Total wetland impacts	53.9
Wetland Mitigation Available	
Preservation credit of proposed mitigation plan (222.5 acres at 10:1 ratio)	22.25
Total replacement wetlands created from prior segments	63.1
Total wetland mitigation available	85.35
Wetland Mitigation Required	
Total wetland mitigation required for current project	12.2
Total wetland mitigation required for prior segments	59.2
Total wetland mitigation required	71.4
Total Surplus Mitigation (mitigation available minus mitigation required)	**13.95**

Blue Creek Fen

The Blue Creek Fen is located in Berrien County, Michigan, within the Paw Paw River sub-watershed of the St. Joseph River watershed. To date, MDOT has purchased 113 acres of property at the Blue Creek Fen of which 18.5 acres have been identified as wetland (1.85 acres of preservation credit at a 10:1 ratio). All wetland acres are classified as high quality. A deed restriction or conservation easement prohibiting development will be placed over the entire 113 acres in perpetuity to assure permanent protection of this area. MDOT currently plans to transfer this land to TNC or other responsible agency for active management at a future date.

Tamarack Fen

The Tamarack Fen is located in Cass County, Michigan, within the St. Joseph River watershed. TNC purchased 292 acres of property within this fen system as a "mitigation service" for MDOT. The mitigation service includes the permanent protection of this property as well as active management to preserve the quality and species diversity within the fen as well as the Mitchell's satyr butterfly habitat. Of the 292 acres of property that were purchased, 118 acres have been identified as wetland (11.8 acres of preservation credit at a 10:1 ratio). All wetland acres are classified as high quality. A deed restriction or conservation easement prohibiting development will be placed over the 118 acres of wetland and the associated perimeter buffer zone to assure permanent protection of this area.

Liberty Fen

The Liberty Fen is located in Jackson and Hillsdale Counties of Michigan, within the Grand River watershed. At this fen system, TNC purchased 251 acres of property as a "mitigation service" for MDOT. The mitigation service includes the permanent protection of this property as well as active management to preserve the quality and species diversity within the fen as well as the Mitchell's satyr butterfly habitat. Of the 251 acres of property that were purchased, 86 acres have been identified as wetland habitat (8.6 acres of preservation credit at a 10:1 ratio). All wetland acres are classified as high quality. A deed restriction or conservation easement prohibiting development will be placed over the 86 acres of wetland and the associated perimeter buffer zone to assure permanent protection of this area.

A wetland finding has been completed in accordance with Executive Order 11990 and has been attached as **Appendix A.2**.

5.13 Water Body Impacts

This section discusses the impacts of the US-31 alternatives on streams and other surface water bodies. Blue Creek and Yellow Creek are the only major water bodies that have the potential to be impacted by the alternatives. Other water body considerations in the study area include scattered wetlands, discussed in **Section 5.12 Wetland Impacts**, and general impacts to the flow of surface water into county drains.

5.13.1 Surface Water Quality

Waterways located within the study area include Blue Creek, Yellow Creek (which is a tributary to Blue Creek), the Carmichael and Closson and the Wright and Woodley county drains, and a variety of small swales. Blue Creek and Yellow Creek are second and third order coldwater streams. Only a small portion of Yellow Creek is found within the study area before it flows into Blue Creek. Existing I-94 crosses Blue Creek northeast of the BL-94 interchange. Flow stability along Blue Creek is good but shows evidence of periodic high flows during storm events. There

is some evidence of bank erosion resulting from these high flows. Some drainage from I-94 and local roads is currently discharged into Blue Creek, mostly downstream of the Blue Creek Fen which is located east of I-94.

Overall increases in impervious roadway surfaces can degrade surface water runoff quality. Pollutants, spills during construction, increased sedimentation, deicing agents, and pesticide use all contribute to a potential cumulative degradation of surface and groundwater as discussed in **Section 5.11 Water Quality Impacts**. The concentrations of contaminants entering surface waters during road operation are generally proportional to traffic volumes and the frequency/concentration of maintenance operations.

A coordination meeting was held with the Berrien County Drain Commissioner in May 2003 to discuss the impacts of Recommended Alternative PA-2 on local county drains. A storm water management plan will be incorporated into the final engineering and construction document and a detailed drainage plan will be developed for the Recommended Alternative during the design phase.

Impacts of No-Build Alternative: Under a No-Build Alternative, there will be no impacts to Blue Creek and Yellow Creek or the surface water flowing into them.

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 would cross two county drains and the Blue Creek. I-94 reconstruction would not result in new crossings of Blue or Yellow Creeks and would have no direct impacts on either crossing. Open ditching is proposed along I-94 west of the I-94/BL-94/US-31 interchange and east of the I-94/I-196/US-31 interchange, and along US-31 south of I-94. The proposed open ditch design along I-94 would improve upon the existing ditch system which consists of very narrow ditch bottoms and steep backslopes. It is anticipated that storm water velocities within the proposed ditch system would require permanent ditch bottom stabilization to minimize soil erosion and sedimentation.

Widening I-94 into the median will result in increased impervious area and runoff in the vicinity of the existing I-94 crossing of Blue Creek. An enclosed drainage system is proposed in the median. This enclosed drainage system would handle all runoff from crown-point (the highest point of each set of lanes) to crown-point of the freeway where it is widened.

The detention basin drainage system proposed to accommodate drainage from the enclosed median storm system in the DSEIS was changed to address comments from regulatory agencies that the previously proposed open water detention facilities might compromise the cold water temperature of Blue Creek. It is now proposed that the enclosed median storm system would discharge to the new outside open ditch system a minimum of 300 feet east and west of Blue Creek. This will allow for adequate filtration of sedimentation and prevent detained water from warming prior to release into Blue Creek. Discharges of runoff into Blue Creek would occur downstream from the Blue Creek Fen to avoid any potential adverse impacts to the fen habitat. These discharges would be regulated to ensure that the level of discharge into Blue Creek is not significantly increased and the backwater elevation is not impacted by more than 0.01 feet upstream of the existing Blue Creek structure. The existing Blue Creek structure will not be replaced or extended as part of the I-94 improvements.

Figure 5.7 illustrates the potential culvert locations and new proposed right-of-way limits along I-94 compared with the previously proposed detention facility concept for Recommended Alternative PA-2.

Reconstruction of BL-94 will utilize approximately the same drainage patterns as what is existing. The proposed BL-94 alignment would be shifted slightly west requiring the replacement of the existing Carmichael and Closson Drain. The contributing drainage area to this culvert is less than two square miles.

The proposed vertical alignment places the US-31 high-point between Britain Avenue and Benton Center Road (**Figure 5.6**). The flow pattern south of this high-point would follow the existing flow pattern south to an existing wetland complex that ultimately drains into the Wright and Woodley Drain which has a contributing drainage area totaling less than two square miles at this location. The flow pattern north of this high-point would follow the existing drainage course north and west. Much of US-31 is proposed to be constructed in a fill section without ditches but will require equalizing culverts to accommodate existing overland flow patterns.

Mitigation: A variety of remedial actions will be utilized to mitigate general surface water quality impacts of Recommended Alternative PA-2. Sedimentation can be controlled through: 1) protecting the side slopes, ditches, and other areas draining directly into waterways by using vegetation buffer strips such as sod, seed, rip-rap, netting, hydro-mulch, or erosion control fabric; 2) stabilizing and replanting disturbed areas early in the construction phase where possible; and 3) protecting the natural vegetation outside the right-of-way. Direct discharge of highway runoff to drainage ditches and streams would be avoided where possible. Highway discharge would be routed through grass waterways with check dams, filter strips, and/or buffer strips adjacent to watercourses. These systems reduce the transfer of pollutants and sediments to streams by limiting the velocity of discharge and allowing potentially contaminated solids to settle out prior to discharging into surface waters. Landscaping to shade areas adjacent to Blue Creek will be determined during the final design phase.

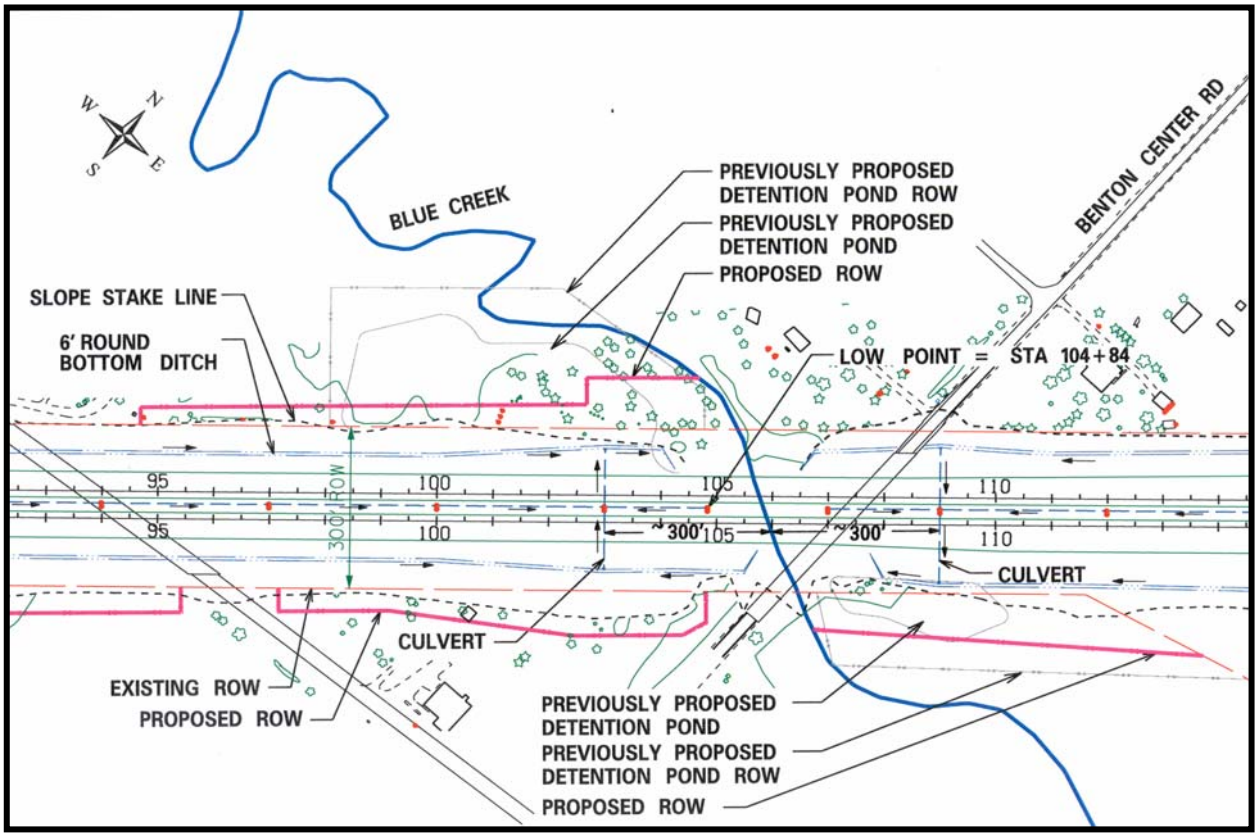


Figure 5.7 Recommended Alternative PA-2 Drainage along I-94

5.13.2 Fish and Aquatic Biota

Impacts of No-Build Alternative: Under a No-Build Alternative the current conditions for fish and aquatic biota within the study area would remain. Blue Creek has an acceptable fish community rating and is a designated trout stream. Continued stocking of Brown Trout or other strains of trout is required to maintain the population, as there is no evidence of natural reproduction. The quality of habitat within Blue Creek for aquatic biota is good while the macroinvertebrate community rates as acceptable. Scattered wetlands within the project area also host fish and aquatic biota.

Impacts of Recommended Alternative PA-2: Impacts from Recommended Alternative PA-2 on fish and aquatic biota are directly related to the potential impacts to surface water bodies discussed previously. Fish and aquatic biota could be adversely impacted to the extent that overall surface water is impacted; mitigation measures will help avoid impacts. Care would be taken to ensure that the temperature of Blue Creek is not substantially altered so as to harm the habitats for cool and coldwater fish. Maintaining the current rate of discharge into the creek will aid in ensuring the temperature does not increase. An increase in sedimentation in both the creeks and wetlands during and after construction can impact aquatic biota by altering preferred habitat. Silt that covers and/or adheres to stone and other hard habitat surfaces can reduce the spawning success of cold and cool water fish species. If preferred macro invertebrate habitat is also altered, food sources for fish will be reduced. Implementation of measures to decrease sedimentation as discussed in the preceding section and **Section 5.22 Construction Impacts** will reduce these impacts.

5.14 Floodplain Impacts

This section describes the potential impacts on local floodplains and proposed mitigation measures. The study lies within the St. Joseph River watershed and the Paw Paw River sub-watershed. The Carmichael and Closson Drain to the west and the Blue and Yellow Creeks to the north are the three water bodies with identified 100-year floodplains within the study area; see **Figure 5.6**. These floodplain impacts were determined from Flood Insurance Rate Maps issued by the National Flood Insurance Program.

Short-term floodplain impacts are typically associated with highway construction activities. Activities such as grading, disturbance of vegetative cover, excavation, creation of temporary stream crossings, and wetland disruption can result in localized increases in runoff and sedimentation.

Long-term floodplain impacts are typically associated with highway operation. Increased runoff associated with the addition of impervious surface areas such as pavement combined with a reduction of wetland habitat contiguous to stream courses can result in increased peak storm water runoff and a loss of localized runoff storage capacity. These conditions may lead to decreased water quality and an increase in downstream flooding.

Impacts of No-Build Alternative: There are no floodplain impacts associated with the No-Build Alternative.

Impacts of Recommended Alternative PA-2: Recommended Alternative PA-2 would cross two county drains (Wright and Woodley Drain and the Carmichael and Clossson Drain) and the Blue Creek. Both of these drain crossings have a drainage area less than two square miles

contributing to them. It would not result in new crossings of Blue or Yellow Creeks and would have no direct impacts on either crossing. Recommended Alternative PA-2 would require a slight shift in the BL-94 alignment and would require the replacement of the 84-inch Carmichael and Closson Drain culvert crossing on new location. This replacement will result in zero net increase of fill in the floodplain and will not impact the existing backwater elevation by more than 0.01 foot. See **Section 3.5.2 Recommended Alternative PA-2** for a complete discussion of floodplain and drainage issues associated with the Recommended Alternative.

Based upon the above information, Recommended Alternative PA-2 should not cause significant floodplain encroachments that would involve one or more of the following construction or flood related impacts:

- A significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles or provides a community's only evacuation route.
- Significant consequences associated with the probability of flooding, including property loss and hazard to life.
- A significant adverse impact on natural and beneficial floodplain values.

Mitigation: Executive Order 11988, Floodplain Management, directs all federal agencies to avoid taking any action in a floodplain unless there is no practical alternative. During the design phase of the Recommend Alternative identified in the Record of Decision, all measures will be taken to comply with Executive Order 11988. All drainage structures and bridges will be designed per MDOT regulations so that projected 100-year floodplain levels will not be affected, and natural and beneficial floodplain values will not be sacrificed. Impacts to surface hydrology and floodplains will be minimized through engineering design and proper application of erosion and sedimentation control measures. Hydrologic and floodplain mitigation plans for each stream crossing will be developed in coordination with federal, state, and local protection standards. Refer to **Section 5.24 Mitigation Summary** for further details.

5.15 Wild and Scenic Rivers and Natural River Impacts

None of the alternatives cross Federal Wild or Scenic River Systems. There are also no state designated Natural Rivers within the study area, as defined by the Natural Rivers Act (Act 231 of 1970).

5.16 Coastal Barriers / Critical Dune Impacts

There are no federally designated coastal barriers within the study area, as defined by the Coastal Barriers Act of 1982 (P. L. 97-348). There are no critical dune areas within the study area.

5.17 Coastal Zone Impacts

The project corridor is not located within a Federal Coastal Zone Management Boundary, as defined by the Coastal Zone Management Act of 1972.

5.18 Threatened and Endangered Species Impacts

Projects similar to the US-31 freeway connection to I-94 have the potential to impact plants and wildlife through habitat degradation or the introduction of new barriers to migratory patterns. This section focuses on the potential impacts of the No-Build Alternative and Recommended Alternative PA-2 on species listed as endangered, threatened, or of special concern by federal or state government. Endangered and threatened species are protected from harm pursuant to federal and state law. Species of special concern are not formally afforded regulatory protection, however any reduction in their number or habitat is of concern from a state, regional, and national perspective. **Figure 5.6** in **Section 5.12 Wetland Impacts** displays a map of the alternatives in relation to confirmed and potential locations of habitat for listed species.

Biologists use a Floristic Quality Index (FQI) to measure floristic diversity and the affinity for certain plant communities to harbor threatened or endangered plant species. The FQI is a technique used for assessment of the floristic quality in a defined area or plant community. A FQI takes into account the total number of different plant species in an area and the tendency of those plants to represent an unaltered pre-settlement natural community. This value can be used to assess the floristic quality of a wetland or upland habitat complex. Floristic quality assessments were conducted for the wetland and upland complexes impacted by each alternative.

Impacts of No-Build Alternative: A No-Build Alternative would pose no threat to any state or federally listed threatened, endangered, special concern, or candidate species.

Impacts of Recommended Alternative PA-2: None of the complexes affected within the Recommended Alternative PA-2 right-of-way had a FQI higher than 18.7. A FQI rating of 20 or less indicates that an area has low or minimal floristic significance (habitat value and diversity) from a statewide perspective and is less likely to support threatened or endangered species.

Areas within Recommended Alternative PA-2 showed no past records or sightings of any species listed as threatened, endangered, or special concern. The Eastern box turtle, a state special concern species, was identified as inhabiting the outer edges of wetlands impacted by Recommended Alternative PA-2. Discussions with property owners did not provide any past records of listed species being present. Based on visual observation and habitat assessments within the impacted areas of Recommended Alternative PA-2, there is a low probability that any of the threatened or endangered species listed are present. **Table 5.11** identifies threatened, endangered and special concern species listed by the United States Fish and Wildlife Service (USFWS) and the Michigan Department of Natural Resources (MDNR) for this area. The USFWS list represents species for which potential habitat exists within the area for these species and the MDNR lists actual records of past sightings of the species within the same geographic area. The Eastern box turtle, a state species of special concern, appeared throughout northern portions of the project area and may migrate into wetland complexes associated with Recommended Alternative PA-2. However, the Eastern box turtle was not observed in potentially impacted areas and no other listed species were observed within or adjacent to the Recommended Alternative right-of-way.

Recommended Alternative PA-2 would impact one site (approximately 32 acres) with moderate potential to provide roosting habitat for the federally endangered Indiana bat. Loss of potential habitat would occur from the removal of older or dead trees that could possibly serve as roosting cover for this species. Verification of the presence of the bat within the study area has

not occurred and there are no sighting records of the Indiana bat in Berrien County, Michigan. The Indiana bat is a migratory species that is known to migrate through and roost in lower Michigan during the summer months.

Snake species associated with wetland habitat that could potentially be found within the Recommended Alternative PA-2 right-of-way include the federally endangered Kirtland's snake, Northern copperbelly watersnake, and the special concern Eastern massasauga rattlesnake. Although none of these species was observed during biological surveys within the study area, loss of wetland habitat due to construction activities could potentially impact one or more of these species.

Although no listed snake species were observed during field surveys and there is no past record of threatened or endangered species, or species of special concern, wetland habitat does exist within the Recommended Alternative PA-2 right-of-way. Based on visual observations, habitat assessments, and property owner interviews, there is low probability that any listed species are present within wetlands or adjacent upland associated with Recommended Alternative PA-2.

The USFWS issued a Biological Opinion in 1994 which addressed the sensitivity and ecological value of the Blue Creek Fen as habitat for the Mitchell's satyr butterfly. It was determined that construction of the 1981 approved alignment (PA-4) would "jeopardize the continued existence of the species". Because of the expected impacts associated with PA-4, MDOT entered into the formal Section 7 Consultation process with the USFWS. Recommended Alternative PA-2 was developed to reduce or eliminate adverse effects on the surrounding environment. This alternative eliminates potential impacts to the Blue Creek Fen ecosystem and the federally endangered Mitchell's satyr butterfly. As a result, the Federal Highway Administration (FHWA) and MDOT have been officially released from the Section 7 Consultation process and released from the "jeopardy finding" issued by the USFWS in the 1994 Biological Opinion. In a letter to MDOT dated November 14, 2003, (**Appendix E.5**) the USFWS states "we concur with your determination that the proposed action would have beneficial effect on Mitchell's satyr and is not likely to adversely affect this listed species".

No state or federally threatened and endangered species permit is required due to the no impacts determination associated with Recommended Alternative PA-2.

Table 5.11 Potential Habitat for State and Federally Listed Threatened and Endangered Species (E = Endangered, T= Threatened, SC = Special Concern)*

Target Species		**PA-1**	**PA-2**	**PA-3**	**PA-4**
Black rat snake *(Elaphne obsoleta obsoleta)*	SC		X	X	X
Eastern box turtle *(Terrapene carolina Carolina)*	SC		X	X	X
Eastern massasauga rattlesnake *(Sistrurus catenatus catenatus)*	SC		X	X	X
Goldenseal *(Hydrastis canadensis)*	T		X	X	X
Indiana bat *(Myotis sodalis)*** (Federally listed)	E		X	X	X
Jacob's ladder *(Polemonium reptans)*	T				X
Jame's sedge *(Carex jamesil)*	SC				X
Kirtland's snake *(Clonophis kirtlandi)* (Federally listed)	E		X	X	X
Mitchell's satyr butterfly *(Neonympha mitchelli)* (Federally listed)	E				X
Northern copperbelly snake *(Nerodia erythrogaster neglecta)* (Federally listed)	E		X	X	X
Powesheik skipper *(Oarisma powsheik)*	T				X
Prairie trillium *(Trillium recurvatum)*	T				X
Rope dodder *(Cuscuta glomerata)*	SC		X	X	X
Sedge *(Carex squarrosa)*	SC				X
Showy Coneflower *(Rudbeckia sullivantii)*	SC				X
Spotted turtle *(Clemmys guttata)*	T				X
Swamp metalmark *(CalephTelis muticum)*	SC				X
Twinleaf *(Jeffersonia diphylla)*	SC		X	X	X
White lady's-slipper *(Cypripedium candidum)*	T				X
Total Number of Listed Species with Potential Habitat:		**0**	**9**	**9**	**19**

Note: All species are state listed with the exception of the Indiana bat, Kirtland's snake, Mitchell's satyr butterfly, and the Northern copperbelly snake, which are both state and federally listed.
* Checked species are those for which potential habitat exists within or near the ROW for the noted alternative.
** The Indiana bat has never been recorded in the study area but potential habitat exists.
*** Only the Eastern box turtle and the Mitchell's satyr butterfly were observed within the study area.

Mitigation: At the request of the MDNR, if Eastern box turtles are encountered during construction, special care must be taken to remove them from the construction zone. At the preconstruction meeting, construction crews will be required to undergo Eastern box turtle identification and removal procedures with qualified MDOT personnel prior to start of work. Any tree removal within identified potential habitat areas for the Indiana bat will be prohibited between April 1st and October 1st to avoid any possibility of directly impacting the species. Mitigation measures to avoid impacts to snake habitat include the redesign of loop ramps at the I-94/BL-94/US-31 interchange to reduce wetland impacts, and 222.5 acres of high quality wetland preservation of which 136.5 acres are within the same watershed.

5.19 Cultural Resources

5.19.1 Above Ground Resources

There are no above-ground properties potentially eligible for the National Register of Historic Places (NRHP) within the Area of Potential Effect (APE) for Recommended Alternative PA-2. To determine the effect of an alternative on a cultural resource, FHWA applies the criteria of adverse effect, as listed in Section 106 of the National Historic Preservation Act. A project results in an adverse effect on a historic property when it diminishes those characteristics that make it historically significant. Activities that may result in an adverse effect include demolition, landscape changes, isolation of a property from its setting, and introduction of visual, audible, or atmospheric elements that affect the characteristics that make the property historic.

A Phase I Reconnaissance Survey of above-ground resources was conducted for the proposed project to determine NRHP eligibility for properties within the study area. As a result of the Reconnaissance Survey and coordination with the Michigan State Historic Preservation Office (SHPO) two properties were determined to be eligible for listing on the NRHP (see SHPO concurrence letter in Appendix E.1 of the DSEIS). Site A, as discussed in **Section 4.19 Cultural Resources**, would have required right-of-way acquisition with PA-4. No other alternatives would impact eligible above-ground cultural resources. A SHPO letter of determination for Recommended Alternative PA-2 can be found in **Appendix E.6**.

Site A – Isolated Barn (3893 Territorial Road)

This property is located on the north side of Territorial Road approximately one mile east of I-94. The barn was reportedly a mail-ordered barn built and owned by the Israelite House of David religious group in the early 1900s. PA-4 would introduce a freeway alignment onto Site A (**Figure 5.8**), which directly impacts the House of David barn and would require demolition of the barn. Demolition of the barn would result in an adverse effect. The impacts would alter the distinctive characteristics of type, period, and method, as well as the significant contribution of the barn and property to the broad patterns of our history. Recommended Alternative PA-2 would not impact Site A.

Site B - Migrant Workers Cottages (645 Blue Creek Road)

Recommended Alternative PA-2 would pass approximately 1000 feet west of Site B **Figure 4.3**. Noise levels are not anticipated to exceed the FHWA Noise Abatement Criteria at Site B and no adverse effects are anticipated.

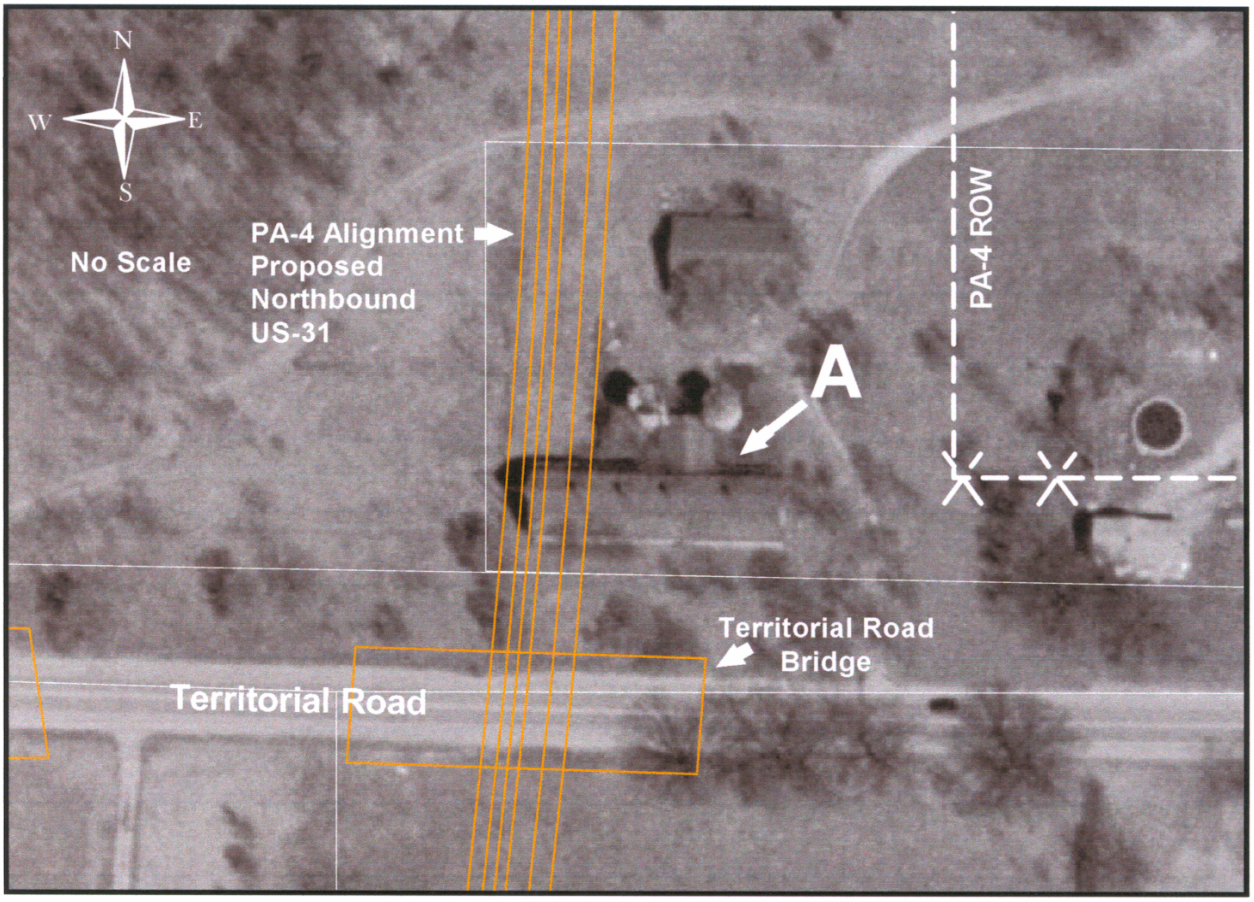


Figure 5.8 House of David Barn, Site A

5.19.2 Archaeological Resources

Impacts: There are no archaeological properties within the Area of Potential Effect (APE) for Recommended Alternative PA-2 that are potentially eligible for the NRHP. Prior analysis in the DSEIS suggested that Recommended Alternative PA-2, PA-3, and PA-4 could potentially impact one previously recorded archaeological site (20BE116). These alternatives would have required the acquisition of right-of-way covering part of this site's reported location according to the Office of the State Archaeologist. However, as discussed in **Section 4.19.2 Archaeological Resources**, no evidence of site 20BE116 was noted within the study area during the 2001 Phase I archaeological survey. Upon further investigation and coordination with the SHPO it was determined that site 20BE116 is not located within the APE for Recommended Alternative PA-2. Therefore, it also does not require consideration as a potential 4(f) impact. A SHPO letter of determination can be found in **Appendix E.6**.

5.20 Known and Potential Hazardous Waste Sites

The following state and federal regulatory agency lists were reviewed to identify potential regulated and/or environmentally impacted sites within the proposed alternatives.

- Michigan Department of Environmental Quality (MDEQ) Environmental Response Division (ERD)
- MDEQ Storage Tank Division (STD)
- MDEQ Open and Closed Leaking Underground Storage Tank (LUST) Sites
- MDEQ STD, Registered Underground Storage Tanks (USTs)
- MDEQ Waste Management Division (WMD)
- United States Environmental Protection Agency (USEPA) Superfund Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Hazardous Waste Sites
- USEPA Superfund CERCLIS Archive No Further Remedial Action Planned Sites (NFRAP)
- USEPA Superfund National Priorities List (NPL)
- USEPA Federal Resource Conservation and Recovery Act (RCRA) Generators List for Michigan
- USEPA RCRA Treatment Storage and Disposal (TSD) Facilities List
- Federal Resource Conservation and Recovery Information System (RCRIS) Corrective Action (CORRACTS) Facilities List
- USEPA Emergency Response Notification System (ERNS) List

The reviewed state and federal agency lists returned three registered UST sites with removed tanks located in the study area. The locations of these registered UST sites are shown on **Figure 5.6** in **Section 5.12 Wetland Impacts** and would not be impacted by Recommended Alternative PA-2. Two of these registered UST sites are located along Blue Creek Road, west of Recommended Alternative PA-2 while one registered UST sites is located on Territorial Road, along the northern edge of the study area.

The review of agency lists also identified two USEPA Superfund CERCLIS Archive NFRAP sites which were located within the Benton Harbor area but could not be exactly located due to lack of information. They may or may not be located in the vicinity of the study area. These two Archive NFRAP sites have been removed from the CERCLIS list and are unlikely to be sites of existing contamination. **Table A.1** in **Appendix A.6 Project Area Contamination Survey** lists the identified UST and Archive NFRAP sites in more detail.

Field observation also identified several Recognized Environmental Conditions (RECs) in connection with the proposed alternatives. These are sites that are not listed in any agency database and would warrant further evaluation in conjunction with any proposed right-of-way acquisition. The RECs include dumping areas, above ground storage tanks (ASTs), natural gas pipelines, asbestos and lead in buildings, possible PCB-containing transformers, possible historical heating oil usage, private water wells and septic systems, and a historical oil well and brine pit. An area of disturbed soil and possible dumping was also identified in historical aerial photographs.

Impacts of No-Build Alternative: The No-Build Alternative does not impact any listed sites or RECs.

Impacts of Recommended Alternative PA-2: Five unlisted sites were identified as RECs within the proposed right-of-way for Recommended Alternative PA-2. Four of these are disposal areas containing farm equipment, tanks, construction debris, household debris, and batteries. The other site is an area of mounded soil near open water.

Two natural gas pipeline right-of-way (ROW) corridors traverse the southern portion of the project area in a general northeast-southwest direction. The presence of these pipeline ROW's also represents a REC in connection with Recommended Alternative PA-2.

Similar RECs would be encountered with any Build Alternative chosen for the project. Roadway geometrics make it difficult to avoid individual small REC sites which are scattered throughout the study area. As the affected pipelines are transected by Recommended Alternative PA-2, it is impossible to avoid impacting them with a minor alignment shifts.

Mitigation: Identified RECs will require additional environmental investigation. This includes removal of debris and environmental sampling in areas containing batteries, chemical containers, metal scraps, drums, and farm equipment. Environmental sampling will also be performed near the observed RECs, and in areas of historical disturbed soil and possible dumping or pesticide contaminated sites prior to excavation. Buildings in the proposed right-of-way will be sampled for asbestos and lead-based paint prior to demolition. Private water wells and septic tanks affected by development should be properly abandoned. In addition, a former oil well be evaluated for compliance with current abandonment requirements and the oil well pit be assessed for impacts from brine.

MDOT will also coordinate with the MDEQ Surface Water Quality Division and Waste Management Division when excavation or disturbance of bottom sediments is required in areas of known river, stream, or lake bottom sediment contamination. Coordination could include testing of bottom sediments within the project area, reviewing results with the Surface Water Quality Division to determine if any contamination exists, and reviewing results with the Waste Management Division to determine if any special disposal methods will be required.

5.21 Aesthetic and Visual Impacts

Impacts to the aesthetic and visual character of the study area as a result of Recommended Alternative PA-2 include short-term impacts related to construction efforts and long-term direct impacts associated with grading, clearing of vegetation, and construction of the improvements. The study area has a distinct rural character that will be affected to some degree by any Build Alternative. This section discusses specific locations where the alternatives could have direct aesthetic or visual impacts on their surroundings.

Impacts of No-Build Alternative: This alternative would have little visual impact on the current character of the project corridor. Potential future development along Napier Avenue is likely to give motorists traveling to or from US-31 by way of Napier Avenue and I-94 a more urban view than would occur with a US-31 freeway connection to I-94. Urban development and congestion on Napier Avenue will be increased by terminating the existing US-31 freeway at Napier Avenue without a freeway-to-freeway connection.

Impacts of Recommended Alternative PA-2: Visual impacts of Recommended Alternative PA-2 may be considered from both the perspective of the view of, and the view from, the roadway. The view from US-31 to surrounding locations will consist of open rural areas from north of Napier Avenue north to Highland Avenue. In the long-term, new development may increase the urban character of the view from the roadway, but overall views from Recommended Alternative PA-2 will be more rural in nature than those from the I-94 and Napier Avenue routes that motorists would otherwise have to use to access the existing US-31 freeway. With Recommended Alternative PA-2, motorists will have reduced congestion compared with the No-Build Alternative and they will likely better appreciate views from a US-31 Build Alternative.

During the construction of Recommended Alternative PA-2, the clearing and filling of right-of-way along with the presence of large construction equipment will cause disruptions to the landscape for neighboring residents and traffic, but these will be temporary effects.

Potential long-term impacts of Recommended Alternative PA-2 on viewers of the project will be connected to the introduced presence of new roadways and bridges along with a more expansive interchange at I-94/US-31/BL-94 in what is a predominantly rural landscape. The relocated I-94/BL-94/US-31 interchange will give some area residents along Highland and Britain Avenues, who previously had a view with rural characteristics, the view of a freeway-to-freeway interchange.

Mitigation: Mitigation of aesthetic and visual impacts resulting from Recommended Alternative PA-2 could come in many forms. Natural and man-made barriers can reduce the visual presence of a new highway for residents and businesses nearby. In 2000, the MDOT Southwest Region Office received a grant to develop a corridor preservation plan for US-31, which requires the agreement and coordination of local officials. The Southwestern Michigan Commission conducted a survey of all communities adjacent to the US-31 corridor and identified land use changes between 1976 and 1996 as reported by the Center for Remote Sensing at Michigan State University. The returned surveys from corridor residents identify the following priorities, listed from highest to least importance.

1. Pavement condition
2. Billboard control
3. Removal of litter
4. Landscape upkeep
5. Protect open space
6. Protect views of the St. Joseph River (south of study area)
7. Landscape roadway median
8. Picnic/rest areas
9. Walking/bicycle trails
10. Plant more trees
11. Special landscaping

These priorities promote the visual appeal of a Build Alternative from the point of view of the motorist on US-31 and the surrounding area viewing US-31 from a distance. Meetings are ongoing between local officials and MDOT to continue planning for the beautification of the US-31 corridor.

5.22 Construction Impacts

For Recommended Alternative PA-2 access for emergency services would be provided throughout construction. All emergency services would be kept informed of changes in road closures and detour routes. If detours are required, residents along detour routes would see an increase in traffic volumes while the detour is in effect. The local agencies would be contacted to determine the most feasible detour routes and haul routes. Roads that are restricted for load or are designated as seasonal routes would not be utilized as haul routes. Mitigation measures such as repaving the haul route roads at project completion would be considered and coordinated with the local agencies in accordance with MDOT Specifications and Special Provisions.

There would be increased noise from demolition, earth moving, hauling, grading, paving, and bridge construction. Construction noise impacts are not expected to be substantial given the relatively short-term duration of construction activities within any given area. Construction noise shall be monitored and regulated in conjunction with MDOT Specifications and Special Provisions.

There would be additional dust, runoff, and sedimentation in the construction area. The project would be constructed to MDOT Standard Specifications, particularly those concerned with erosion and sedimentation control. Disturbed areas within the project limits would be properly restored. Temporary erosion and sediment control measures such as silt fence along drainage ways and at storm inlets would also be used during construction.

Impacts of No-Build Alternative: The No-Build Alternative would have no construction impacts.

Impacts of Recommended Alternative PA-2: The estimated time for construction of Recommended Alternative PA-2 is approximately four years. Part width construction and crossovers would be utilized in order to maintain two lanes of traffic in each direction on I-94. Temporary nighttime closures may be required for bridge beam construction on Territorial Road over I-94, Britain Avenue over I-94, and eastbound and westbound BL-94 over I-94. Traffic on Benton Center Road, Empire Avenue, and Britain Avenue would be detoured as bridges are constructed carrying those roads over US-31. Benton Center Road, Empire Avenue, and Britain Avenue would not all be closed at the same time. Access to all driveways would be maintained except for short durations throughout construction. Because the new US-31/I-94 interchange for Recommended Alternative PA-2 would be located south of the existing I-94/BL-94 interchange, it would be possible to stage construction so that most of the traffic movements could be maintained. Traffic movements at the I-94/I-196 interchange would be virtually unaffected. All traffic control measures would follow the Michigan Manual of Uniform Traffic Control Devices.

There would be user delays during construction caused by detours of Britain Avenue, Empire Avenue, and Benton Center Road, and lane restrictions on I-94. The detour lengths would be minimized, as would the length of time a detour is in effect. Runoff would be directed away from Blue Creek where possible. Sediment traps would be utilized to minimize sedimentation.

5.23 Permits

Michigan rules governing permit requirements and issuance are regulated pursuant to the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended. The MDEQ, Land and Water Division, Transportation and Flood Hazard Management Unit, regulates activities within a floodplain/floodway, wetland, or below the ordinary high water mark, under the following Parts of the Act:

Part 301, Inland Lakes and Streams
Part 303, Wetlands Protection
Part 91, Soil Erosion and Sedimentation Control
Part 31, Floodplain Regulatory Authority

Impacts of No-Build Alternative: There would be approximately 0.3 acres of wetland impacts with the No-Build Alternative. A MDEQ permit will be required for construction that impacts any wetland complex.

Impacts of Recommended Alternative PA-2: A MDEQ permit will be required for Recommended Alternative PA-2 due to the impacts to wetlands. The US Army Corps of Engineers (USACE) also has the authority to regulate activities within waters under section 404 of the Clean Water Act (33 USC 1344). There would be approximately 12.2 acres of wetlands impacted by Recommended Alternative PA-2. The impacted wetlands are located along US-31 north of Napier Avenue and along the southern portion of the proposed US-31/I-94 interchange. The Michigan Department of Transportation (MDOT) proposes to supplement mitigation credits from prior US-31 segments with the preservation of 222.5 acres of high quality wetlands located in three fen complexes as further mitigation for impacted wetlands.

Construction activities that disturb five or more acres of land and have a point source discharge of storm water to waters of the state are required to obtain permit coverage (Rule 2190 of Part 31 of Act 451) from the MDEQ, Surface Water Quality Division.
A Soil Erosion and Sedimentation Control Plan would be required for Recommended Alternative PA-2. Temporary measures such as geotextile silt fence, check dams, and sediment traps and basins would be specified for controlling erosion and sediment transport during construction. The MDEQ will review the MDOT erosion and sedimentation control program to ensure compliance with the Soil Erosion and Sedimentation Control Act (PA 451 of 1994, Part 91). MDOT is not required to obtain individual soil erosion and sedimentation control permits for this project, as it is an authorized public agency. The approved Soil Erosion Control Program and Standard Plan on file with MDEQ will be followed. A Notice of Coverage would be submitted for the construction activities under the National Pollution Discharge Permit.

No known or potential contaminated sites regulated by the Federal Resource Recovery Act of 1976, the Michigan Hazardous Waste Management Act (PA 1979, Number 64, as amended), or the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, were located within the proposed right-of-way for any alternative. Permits for contaminated material transportation would not be required. To control local air pollution impacts, a permit would be required from MDEQ (Air Quality Division) for portable bituminous and concrete plants used during project construction.

Recommended Alternative PA-2 utilizes an urban section along I-94 with the additional pavement width added to the median side. This design concept was chosen to maintain approximately the same overall footprint as the existing section. The concept greatly reduces the permitting issues at the I-94/Blue Creek crossing since floodplain cut/fill will be nonexistent, and the box culvert under I-94 at this location would not require lengthening. However, the proposed section would contain a greater paved area and eliminate the existing grass median, thereby reducing immediate pretreatment of the storm water in roadside ditches. The storm water runoff draining to the median side is proposed to be collected into a central storm sewer system located under the paved median shoulders as described in **Section 3.5.2 Recommended Alternative PA-2**. This drainage design would provide the necessary pretreatment required by MDEQ, and allow for metered discharge of the pretreated water back into Blue Creek.

Proposed US-31 Freeway Connection to I-94
Berrien County, Michigan

Final Supplemental Environmental Impact Statement

Project Specific Mitigation Summary "Green Sheet" for Recommended Alternative PA-2

I. Social and Economic Environment

Due to the concurrent Southwest Michigan Regional Airport expansion project, MDOT will be sensitive to any difficulties arising from temporary fluctuations in the housing market. No significant problems are anticipated for reasons discussed in the relocation plan.

II. Natural Environment

a. Wetland impacts of 12.2 acres (4 acres of emergent, scrub-shrub and wet meadow, and 8.2 acres of forested) will be mitigated by preserving in perpetuity 222.5 acres of high quality wetlands located in three fen complexes: the Blue Creek Fen, the Tamarack Fen, and the Liberty Fen. MDOT currently owns 113 acres of the Blue Creek Fen. The Tamarack Fen and the Liberty Fen are owned and actively managed by The Nature Conservancy. The proposed 222.5 acres will generate a wetland preservation credit of 22.25 acres at a 10:1 ratio. After wetland impacts are mitigated, a balance of 13.95 acres of surplus wetland mitigation will be available for use on this and other MDOT projects.

   A deed restriction or conservation easement prohibiting development will be placed over the entire Blue Creek Fen property including the wetland area in perpetuity to ensure permanent protection. The Tamarack Fen and the Liberty Fen will include a perimeter buffer zone of existing vegetation adjacent to each wetland complex. A permanent deed restriction or conservation easement prohibiting development will be placed over the wetland complexes of the Tamarack Fen and Liberty Fen and associated perimeter buffer zones to ensure protection in perpetuity.

b. To minimize potential impacts to the Indiana bat, any tree removal will be prohibited between April 1st and October 1st in potential habitat areas identified within the FSEIS.

c. MDOT will carry the smaller, reconfigured loop ramps at the I-94/BL-94/US-31 interchange into final design to minimize impacts to wetlands, wetland dependent plant and animal species, reduce right-of-way impacts, and reduce cost.

d. At the request of the MDNR, if Eastern box turtles are encountered during construction, special care must be taken to remove them from the construction zone. At the preconstruction meeting, construction crews will be required to undergo Eastern box turtle identification and removal procedures with qualified MDOT personnel prior to start of work. The Region Resource Analyst shall be contacted if Eastern box turtles are encountered during construction.

III. Hazardous/Contaminated Materials

a. The former oil well will be evaluated for compliance with current abandonment requirements and the oil well pits will be assessed for impacts from brine prior to construction.

b. Due to high groundwater recharge rates within the study area any inadvertent spills of contaminated materials will immediately be contained and removed by trained emergency response personnel.

IV. Construction

a. Redirect roadway runoff away from Blue Creek where possible. Use sediment traps or basins to minimize sedimentation and install vegetative ditches to filter runoff prior to discharge to Blue Creek. The proposed enclosed median storm system will discharge to the new ditch system a minimum of 300 feet east and west of Blue Creek.

b. Landscaping to shade discharge areas adjacent to Blue Creek will be determined during the final design phase.

c. In order to maintain hydrological connectivity, an equalizer culvert will be utilized where the US-31 alignment crosses wetland complex 9. Culvert specifications will be determined during final design.

d. A storm water management plan and a detailed drainage plan will be developed and incorporated into the final design.

e. Two natural gas pipeline right-of-way corridors traverse the southern portion of the project area. Due to the lengthy lead-time (2-3 years) and the complex nature of pipeline relocation, early project coordination is required.

5.24 Mitigation Summary

The goal of mitigation measures is to preserve, to the greatest extent possible, existing neighborhoods, land use, and resources, while improving transportation. Although some adverse impacts are unavoidable, MDOT, through the route location, design, environmental, and construction processes, takes precautions to protect as many social and environmental systems as possible. Construction activities that include the mitigation measures included below are those currently contained in the Michigan 2003 Standard Specifications for Construction and updates will be published in subsequent specification books.

The following paragraphs discuss the standard or general mitigation measures applicable to most or all MDOT projects of this type. These paragraphs summarize and add to potential mitigation measures previously discussed. Without the benefit of detailed design plans and data, tentative mitigation ideas are proposed as a means to avoid or reduce adverse impacts on identified resources. Further agency coordination will continue through the design stage. Design plans will be reviewed by MDOT personnel prior to contract letting in order to incorporate any additional social, economic, or environmental protection items. Construction sites will be reviewed to ensure that the mitigation measures proposed are carried out, and to determine if additional protection is required.

Project specific mitigation can be found on the "Green Sheet" located between **Sections 5.23** and **5.24**. This newly created summary lists proposed project specific mitigation by category. Only special actions required to mitigate proposed impacts of this project are listed.

More mitigation measures may be developed if additional impacts are identified. Specific mitigation measures will be included on the design plans and permit applications.

5.24.1 Measures to Mitigate Right-of-Way Acquisition and Relocation Impacts

1. Compliance with State and Federal laws - Acquisition and relocation assistance and advisory services will be provided by the Michigan Department of Transportation (MDOT) in accordance and compliance with Act 31, Michigan P.A.1970; Act 227, Michigan P.A. 1972; the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended; and Act 87, Michigan P.A. 1980, as amended. The MDOT will inform individuals, businesses and non-profit organizations of the impact, if any, of the project on their property. Every effort will be made through relocation assistance to lessen the impact when it occurs.

2. Residential - The MDOT is required by statute to determine the availability of comparable, decent, safe and sanitary housing for eligible displaced individuals. The MDOT has specific programs to implement the statutory and constitutional requirements of property acquisition and relocation of eligible displacees. Appropriate measures will be taken to ensure that all eligible displaced individuals are advised of the rights, benefits, and courses of action available to them.

3. Purchasing Property - The MDOT will pay just compensation for fee purchase or easement use of property required for transportation purposes. "Just compensation" as defined by the courts is the payment of "fair market value" for the property rights acquired plus allowable damages to any remaining property. "Fair market value" is defined as the highest price estimated, in terms of money, the property would bring if offered for sale on the open market by a willing seller, with a reasonable time allowed to find a purchaser, buying with the knowledge of all the uses to which it is adapted and for which it is capable of being used.

4. Relocation Information - A booklet entitled "Your Rights and Benefits" detailing the relocation assistance program can be obtained from the Michigan Department of Transportation, Real Estate Support Area, P.O. Box 30050, Lansing, Michigan, 48909 or phone (517) 373-2200.

5. Property Acquisition Information - A booklet entitled "Public Roads & Private Property" detailing the purchase of private property can be obtained from the Michigan Department of Transportation, Real Estate Support Area, P.O. Box 30050, Lansing, Michigan, 48909 or phone (517) 373-2200.

6. Conceptual Stage Relocation Plan - The conceptual stage relocation plan for this project is attached in **Appendix D**.

7. During the design phase of the Recommended Alternative efforts will be made to reduce right-of-way takes and minimize farmland impacts.

5.24.2 Wetlands

Mitigation for Recommended Alternative PA-2 includes preservation of 222.5 acres of high quality wetlands located in three fen complexes. This is a part of an overall US-31 freeway mitigation plan (Matthew Road to I-94) which included wetland creation completed in conjunction with prior construction segments. **Section 5.12 Wetland Impacts** provides a full discussion of proposed mitigation measures.

Mitigation ratios of 10:1 for wetland preservation credit are proposed. Recommended Alternative PA-2 is forecasted to require 12.2 acres of wetland mitigation.

In accordance with the administrative rules for Part 303, Wetlands Protection, the preservation of existing wetland may be used as mitigation if the wetland to be preserved performs exceptional physical or biological function, is under a demonstrable threat of loss or substantial degradation due to human activities, and will be protected in perpetuity (deed restrictions or conservation easements). For wetland preservation, a 10:1 ratio applies whereby one acre of wetland is given for ten acres of preserved wetland.

5.24.3 Groundwater Quality

Sealing water wells and sewer lines for the protection of groundwater quality is ensured by MDOT specifications imposed on the contractor. For houses or other structures in urban situations that are relocated or must be razed, sewer lines must be filled with concrete grout at the basement level, and water must be turned off at the street. In rural areas, the sewer line to the septic tank must be filled at the basement level. Abandoned water wells must be filled with cement grout applied from the bottom upward through a conduit extended to the bottom of the

well (in one continuous operation) until the well is filled. The contractor must also meet all local and Michigan Department of Community Health (MDCH) requirements.

Contractors are generally allowed 60 to 90 days following issuance of the demolition contract for the site to be completely cleared. However, only 48 hours is permitted following removal of any structure to fill the foundation to ground level. If the foundation is not filled within this time, MDOT may take independent action to fill the foundation, charging the costs incurred to the contractor. The MDEQ notification procedures for demolitions will be followed.

The above specifications have been approved by the MDCH. The contractor is also referred to the local health department for assistance when special conditions such as flowing wells or wells with a high artesian head are encountered. If high water tables are encountered in cut sections, special methods will be used to reduce any negative effects on the area groundwater. One such method is to raise the road grade.

Drains will be built as necessary along the pavement to drain the roadway sub-base. Stone baskets are used to maintain and reroute the flow of springs when found below the roadway. Intercepted water will be discharged into an available roadside ditch or watercourse. Siltation of such watercourses from this intercepted water is rare.

Inadvertent fuel and hazardous material spills will be immediately contained and removed by trained emergency response personnel.

5.24.4 Surface Water Quality

Adequate soil erosion and sedimentation control measures based on MDOT's approved soil erosion program will be implemented on all projects. A 300-foot vegetation buffer strip will be left in place within the I-94 ditch system along both sides of the Blue Creek crossing. Direct discharge of highway runoff to drainage ditches and streams will be avoided where possible. Highway runoff will be diverted through vegetative controls (grassed waterways) into containment areas prior to outletting into streams, wherever possible. This will promote infiltration, thereby reducing the potential impact on the streams from added runoff and associated pollutants, including deicing salts, heavy metals, and pesticides.

To reduce soil erosion, slope stabilization treatments will be utilized for some of the newly constructed ditches consistent with MDOT Guidelines.

5.24.5 Soil Erosion and Sedimentation Control

Accelerated sedimentation caused by highway construction will be controlled before it enters a water body or leaves the highway right-of-way by the placement of temporary or permanent erosion and sedimentation control measures. MDOT has developed a series of standard erosion control items to be included on design plans to prevent erosion and sedimentation. The design plans will describe the erosion controls and their locations. Payment is made to the contractor for construction and maintenance of items used from this list or items specifically developed for the project.

MDOT has on file with MDEQ an approved operating erosion and sedimentation control program that ensures compliance with Part 91, Soil Erosion and Sedimentation Control of Act 451, as amended. MDOT has been designated an "Authorized Public Agency" by the MDEQ and is self-regulated in its efforts to comply with Part 91. However, the MDEQ may inspect and

enforce soil erosion and sedimentation control practices during construction to ensure that MDOT and the contractor are in compliance with Part 91 and the acceptable erosion and sedimentation control program.

The following is a partial listing of general soil erosion and sedimentation control measures to be carried out in accordance with permit requirements.

1. No work will be done in the Blue Creek channel during periods of seasonally-high water, except as necessary to prevent erosion.
2. All road and bridge construction operations will be confined to the existing or proposed right-of-way limits or acquired easements.

3. Road fill side slopes, ditches, and other raw areas draining directly into Blue Creek will be protected with riprap (up to three feet above the ordinary high water mark), sod, seed, and mulch, or other measures, will be used as necessary to prevent erosion. Direct discharges into Blue Creek will be avoided where possible.

4. The surface area of erodible earth material exposed at any one time will be limited to 5000 feet of dual roadway or 10,000 feet of single roadway. Once the contractor has final graded and stabilized a section of roadway, additional clearing and grading will be allowed.

5. Areas disturbed by construction activities will be stabilized and vegetated within five days after final grading has been completed. Where it is not possible to permanently stabilize a disturbed area, appropriate temporary erosion and sedimentation controls will be implemented. All temporary controls will be maintained until permanent soil erosion and sedimentation controls are in place and functional.

6. The contractor shall have the capability of performing seeding and mulching at locations within 500 feet of any wetlands, lakes, streams, and drains within 24 hours of being directed to perform such work by the project engineer.

7. Special attention will be given to protecting the natural vegetative growth outside the project's slope stake line from removal or siltation. Natural vegetation, in conjunction with other sedimentation controls, provides filtration of runoff not carried in established ditches.

8. The integrity of any agricultural drainage or field tile system encountered will be maintained.

9. The contractor is responsible for preventing the tracking of material onto local roads and streets. If material is tracked onto roads or streets, it shall be removed.

5.24.6 River, Stream, and Drain Crossings

Bridge and culvert work at river, stream, and drain locations will require construction staging and additional protection items to minimize impacts on the watercourse. As part of the design process, permits must be obtained from the Berrien County Drain Commissioner prior to any work in, or storm water discharge to, a county drain. The following are general mitigation items designed to reduce impacts at water crossings. The design plans will show all specific controls for each watercourse.

1. All work below the ordinary high water mark of any river, stream or drain will require permits from the MDEQ. All permit conditions will be adhered to during construction. Permit conditions may include fish spawning protection dates where no work can occur in the water unless it is isolated behind a cofferdam installed prior to the start of the protection date.

2. All construction operations adjacent to watercourses will include appropriate soil erosion and sedimentation controls (**Section 5.24.5 Soil Erosion and Sedimentation Control**).

3. The contractor may be required to maintain a navigable channel during all phases of the project. During part-width construction operations, the contractor will place signs both upstream and downstream of the construction area that clearly indicates the location of the navigable channel. Navigation access on smaller streams may also be required to accommodate small boat and/or canoe usage. The contractor may be required to provide lighting of barges or other navigation obstructions at night.

4. All construction activities will be isolated from the flowing watercourse where possible. This can be done by installing a cofferdam (steel sheeting or sand bags) around the construction area. Another method may be to construct a temporary channel to relocate the existing watercourse while construction takes place at the existing watercourse location. The temporary channel and proposed new channel shall be stabilized prior to water flow being diverted into it. All work shall be done in accordance with the MDOT Road and Bridge Standard Plan R-96-C.

5. Any channel excavation or riprap placement will be done using part-width construction methods. Work will be done on part of the channel while the water flow is temporarily diverted away from the work area. MDOT has a standard detail showing the temporary water flow diversion that will be included on the design plans for all projects that require in-stream work. All work shall be done in accordance with the MDOT Road and Bridge Standard Plan R-96-C.

6. During the design for the Recommend Alternative identified in the Record of Decision, all measures will be taken to comply with Executive Order 11988, Floodplain Management.

5.24.7 Existing Vegetation

Although some tree removal will be necessary, the existing natural and ornamental vegetative cover will be retained wherever possible within the right-of-way. Where the existing groundcover must be removed, replacement vegetation will be established in a timely manner using seed and mulch, or sod.

Roadside trees adjacent to residences will be saved wherever possible. Where trees are to be removed from in front of residences, property owners will be given appropriate notice, and will be offered replacement trees to help offset the functional or aesthetic loss of the removed trees.

Replacement tree species, size, and numbers will be determined by the MDOT's Region Resource Specialist or the Roadside Development Section following coordination with adjacent property owners. For those owners who request replacement trees, the trees will be placed (with the property owner's approval) on adjacent private property as close to the right-of-way line as possible. Property owners would then assume the responsibility for maintaining these trees.

5.24.8 Threatened and Endangered Species

No state or federally threatened and endangered species permit is required due to the no impacts determination associated with Recommended Alternative PA-2. However, coordinated project reviews will be conducted with the USFWS under the provisions of Section 7 of the Endangered Species Act of 1973 and the programmatic consultation guidance for the Transportation Equity Act for the 21st Century, as necessary. These reviews will be done using applicable plans to design projects that avoid or minimize any adverse impacts on federally listed, proposed, and candidate species, and to reduce “incidental take” of these species.

Measures will be set up to isolate and protect any threatened or endangered species located adjacent to any actual construction activities. Protective fencing, tree removal restrictions between April 1st and October 1st within identified potential Indiana bat habitat areas, or other appropriate measures will be used to protect threatened or endangered plant or animal species. If a plant species is identified that cannot be protected, individual plants may need to be transplanted or salvaged as required by the MDNR or USFWS requirements.

Additional mitigation measures will include the redesigned loop ramps at the I-94/BL-94/US-31 interchange to reduce wetland habitat impacts and permanent preservation of 222.5 acres of high quality wetlands located in three fen complexes.

5.24.9 Cultural Resources

As Recommended Alternative PA-2 has no impacts on potentially eligible NRHP sites, mitigation for cultural resources will not be required.

5.24.10 Hazardous/Contaminated Material

A Project Area Contamination Survey (PACS) was conducted to determine if any known or potential sites of environmental contamination exist that could affect the project's design, cost, or schedule. For a summary of the results of the PACS, see **Appendix A.6**.

Additional environmental investigation is proposed for the identified Recognized Environmental Conditions (RECs) found in the PACS. This includes removal of debris and environmental sampling in areas containing batteries, chemical containers, metal scraps, drums, and farm equipment. Environmental sampling should also be performed near the observed above ground storage tanks, and in areas of historically disturbed soil and possible dumping or pesticide contaminated sites. Buildings in the proposed right-of-way should be sampled for asbestos and lead-based paint prior to demolition. If contaminated material or solid waste is discovered during construction, special disposal methods will be setup on this contract as a pay item.

If environmental contamination or hazardous conditions are identified on this project, the appropriate Worker Safety Plan will be implemented.

5.24.11 Aesthetic and Visual

Mitigation of aesthetic and visual impacts resulting from Recommended Alternative PA-2 could come in many forms. Natural and man-made barriers can reduce the visual presence of a new highway for residents and businesses nearby. Meetings will continue between MDOT and local officials to plan for the beautification of the US-31 corridor as discussed in **Section 5.21 Aesthetic and Visual Impacts**.

5.24.12 Disposal of Surplus or Unsuitable Material

Surplus or unsuitable material generated by removal of structures, trees, peat, etc., must be disposed of in accordance with the following provisions designed to control the possible detrimental impacts of such actions.

1. When surplus or unsuitable material is to be disposed of outside the right-of-way, the contractor shall obtain and file with MDOT written permission from the owner of the property on which the material is to be placed. In addition, no surplus or unsuitable material is to be disposed of in any public or private wetland area, watercourse, or floodplain without prior approval (and permit) by the appropriate resource agencies and the FHWA.

2. Inert debris may be used as a basement fill to a depth not less than two feet below the ground level if the basement is not within the roadway cross section. Debris used as fill must be covered with at least two feet of clean soil to fill voids. Basement walls are to be removed to ground level.

3. All regulations of the MDEQ governing disposal of solid wastes must be complied with.

5.24.13 Maintaining Traffic During Construction

Disruption of traffic in the construction area will be minimized to the extent possible, temporary short-term detours may be required. Although control of all construction-related inconveniences is not possible, signing all construction areas will ensure motorist and pedestrian safety. Access will be maintained to properties adjacent to the proposed ROW during construction to the extent possible. Traffic on I-94 will be maintained using part-width construction techniques. This involves maintaining traffic on one half of the roadway while the other half is being reconstructed.

5.24.14 Continuance of Public Utility Service

Water, sanitary sewer, gas, telephone, and electrical transmission lines adjacent to or crossed by the project may require relocation or adjustment. If this should be the case, coordination between MDOT and the affected utility company will take place during design, and relocation will take place prior to construction of the road if possible. The contractor will coordinate construction activities with the affected utility company.

Service to the project area may be temporarily interrupted during the adjustment period. For the most part, the effects of this work will go unnoticed.

5.24.15 Construction Noise Levels and Vibration Impacts

Construction noise will be minimized by measures such as requiring that construction equipment have mufflers, that portable compressors meet federal noise-level standards for that equipment, and that all portable equipment be placed away from or shielded from sensitive noise receptors if at all possible. All local noise ordinances and approved variances will be adhered to.

Where pavement must be fractured or structures must be removed, care will be taken to prevent vibration damage to adjacent structures. In areas where construction-related vibration is anticipated, basement surveys should be conducted before construction begins to document any potential damage caused by highway construction.

5.24.16 Control of Air Pollution During Construction

The contractor must comply with all federal, state, and local laws and regulations governing the control of air pollution.

Dust Control: During the construction of any project, the contractor will be responsible for adequate dust-control measures so as not to cause detriment to the safety, health, welfare, or comfort of any person, or cause damage to any property, residence, or business.

Bituminous and Concrete Plants: All bituminous and Portland cement concrete proportioning plants and crushers must meet the requirements of the rules of Part 55 of Act 451, Natural Resource and Environmental Protection. For any portable bituminous or concrete plant or crusher, the contractor must apply for a permit-to-install or a general permit from the Permit Section, Air Quality Division, of the MDEQ.

This permit-to-install should be applied for a minimum of 30 calendar days for plants with an active MDEQ permit (or 60 calendar days for plants not previously permitted in Michigan) prior to the plant being installed.

Dust collectors will be provided on all bituminous and concrete proportioning plants. Dry, fine aggregate material removed from the dryer exhaust by the dust collector will be returned to the dryer discharge unless otherwise directed by the project engineer.

5.24.17 Environmental Permits

Proposed construction activities may involve the need for permits in several areas. Impacts on bodies of water such as lakes, streams, drains, and wetlands may require permits under:

State - Natural Resources and Environmental Protection Act, 1994 PA 451, as amended

- Part 31, Water Resources Protection of Act 451
- Part 55, Air Pollution Control of Act 451 (see Section M)
- Part 301, Inland Lakes and Streams of Act 451
- Part 303, Wetlands Protection of Act 451
- Part 365, Endangered Species Protection of Act 451

Federal

- Sections 401 and 404 of the Federal Water Pollution Control Act of 1972.
- Water Quality Act Section 402 National Pollutant Discharge Elimination System (NPDES) storm water permit under the Clean Water Act of 1972 as amended.
- Section 10 of Rivers and Harbors Act of 1899
- Federal Endangered Species Act of 1973
- Executive Order 11990

Parts 31 and 301 are administered by the Michigan Department of Environmental Quality (MDEQ). A Part 31 Water Resources Protection Permit (which is reviewed and issued with the Part 301 application) is needed to place fill material within any part of a floodplain with a drainage area of two square miles or greater. A Part 301 Inland Lakes and Streams Permit is required for any work below the ordinary high water mark of any inland lake, stream or drain including the placement of a permanent or temporary crossing, haul road, or construction access pad.

A Part 303, Wetlands Protection Permit is required for any wetland disturbance, temporary as well as permanent. The Part 303 permit is reviewed and issued with the Part 301 permit. A Part 303 permit is required before the placement of a bituminous or concrete proportioning plant would be allowed in any wetland areas. The project engineer should have on file any agreements between the contractor and property owner, and a copy of the wetland permit prior to the installation of any proportioning plants or placement of any fill in a privately or publicly owned wetland.

A Part 365, Endangered Species Permit is required from the MDNR Wildlife Division for any activity which may result in a “take” of a state listed threatened or endangered plant or animal species.

Section 401 requires certification from the state's water quality agency (MDEQ) to ensure that the discharge of dredged or fill material complies with the provisions of the Federal Water Pollution Control Act.

A Section 404 permit is required to place dredged or fill materials into waters of the United States including wetlands. The purpose of this program is to ensure that the chemical, physical, and biological integrity of these waters is protected from the placement of dredged or fill materials that could permanently destroy or alter the character of these valuable resources. The Section 404 Program (including Section 10 waters) that pertains to coastal waters in Michigan is administered by the US Army Corps of Engineers while the portion of the program that deals with non-coastal waters is administered by the MDEQ.

Water Quality Act Section 402 requires a National Pollutant Discharge Elimination System Storm Water discharge permit for construction projects which involve land clearing of five acres or greater. Permit application requirements include the name of receiving water, identification of soil erosion controls during construction, and identification of measures to control pollutants in storm water discharges that occur after construction has been completed. The intent of these requirements is to reduce impacts on water quality during and after construction of the project.

The Federal Endangered Species Act requires consultation with the US Fish and Wildlife Service for any activity which may impact any federally listed threatened or endangered plant or animal species.

Executive Order 11990 states that when federal funds are used on a project, impacts on any wetland (regardless of size) will require that no “Prudent or Feasible Alternative” exists that would eliminate or reduce impacts on that wetland.

Final mitigation measures proposed in areas requiring the above permits will be developed in consultation with the appropriate resource agencies, and will be included in the permit application.

5.24.18 Additional Mitigation or Modifications

The final mitigation package will be reviewed by the MDOT project study team, in cooperation with concerned state, federal, and local agencies.

Some changes in the early mitigation concepts discussed in this document may be required when design begins or when in-depth soil borings are taken and analyzed. These mitigation concepts will be implemented to the extent possible. Where changes are necessary, they will be designed and field reviewed before permits are applied for and construction begins. Changes may also be necessary during the construction phase, but they will reflect the early mitigation intent. These preceding mitigation concepts are based on the best information available through November 2003.

5.25 The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

Any Practical Alternative would involve short-term and long-term tradeoffs. The fiscal goal of any roadway improvement is that the ultimate benefit should justify the initial expenditure. In the context of this discussion, "short-term" refers to the immediate direct consequences of the project while "long-term" refers to its direct or secondary effects on future generations.

Short-term consequences to the environment resulting from Recommended Alternative PA-2 have been discussed throughout this section and would include:

- temporary air, noise, water pollution, and visual effects caused by construction,
- increased cost to motorists in time and fuel efficiency because of delays caused by construction,
- disturbances to businesses, homes, and institutions because of construction,
- conversion of open space, agricultural land, woodlands, and wetlands to transportation usage,
- relocation of people and businesses, including expenses that would be incurred as these people are compensated,
- reduction in property tax revenues resulting from relocation of businesses, residences, and farms, and
- use of public funds to build the highway.

Most of the long-term benefits which may be realized from improvements to US-31 are addressed in **Section 2.0 Purpose of and Need for the Proposed Action**. These long-term benefits would include:

- improved system connectivity and linkage within southwestern Michigan, and improved local access within Berrien County,
- improved efficiency of north-south vehicular movements throughout the US-31 corridor,
- reduction in traffic congestion on Napier Avenue,
- increased economic development opportunities,
- reduction of air pollution and traffic noise at some locations due to decreased congestion, and
- improved traffic separation (I-94 median barrier)

5.26 Irreversible or Irretrievable Commitments of Resources

Irretrievable commitments of the No-Build Alternative include the money, time, and personal hardship related to increasing congestion and subsequent reduced level-of-service (LOS) to motorists on existing US-31 and Napier Avenue. As LOS deteriorates over time, there would be increasing costs for energy and the time required for business travel and personal driving. As congestion increases, air pollution, noise pollution, and crash incidents would affect the local environment to a greater extent than exists today.

Implementation of Recommended Alternative PA-2 involves the commitment of a range of natural, physical, human, and fiscal resources. Land used for construction of the proposed

improvements is considered an irreversible commitment during the time period that the land is used for a highway facility. For right-of-way, land resources would be committed from natural, agricultural, residential, and commercial areas. However, if a greater need arises for use of the land or if the highway facility is no longer needed, the land can be converted to another use. At present, there is no reason to believe such a conversion will ever occur.

Construction of any Build Alternative will utilize considerable amounts of fossil fuels, labor, and construction materials such as cement, aggregate, and bituminous materials. Such a resource use would be generally irreversible although it would be possible to retrieve and reuse these resources to a limited extent. Any construction will also require a substantial one-time expenditure of both state and federal funds that are irretrievable.

The commitment of these resources is based on the concept that residents in the local communities, the State of Michigan, and the midwest will benefit from the improved quality of the transportation system.